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JULY EXAMINATIONS, 1882.

FIRST CLASS TEACHERS—GRADES A AND B.

ANCIENT HISTORY AND GEOGRAPHY.

TIME—TWO HOURS AND A HALF.

1. Give an account of the second invasion of Greece by the Persians.

2. Sketch briefly the Constitution of Athens in the time of Perikles.

3. State, in chronological order, with dates, the conquests of Rome from B.C. 202 to B.C. 133.

4. Describe the character and career of Caius Gracchus, or of Lucius Sulla.

5. Describe briefly the political circumstances which led to the banishment and recall of Cicero.

6. Locate the following places:—Ravenna, Brundisium, Pharsalia, Cannae, Pydna, Potidaia, Actium, Munda, Saguntum, Philippi, Ægos Potamos, Sphakteria, Minturnae, Skandeia.

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JULY EXAMINATIONS, 1882.

FIRST CLASS TEACHERS—GRADES A AND B.

ENGLISH LANGUAGE AND HISTORY OF ENGLISH LITERATURE.

TIME—TWO HOURS AND A HALF.

1. State briefly the changes caused by the Norman Conquest (1) in the Grammar, (2) in the vocabulary of English. Illustrate by examples what has been termed the bilingualism of English.

2. Give the derivation and history of the following words:—jeopardy, villain, esquire, chattels, strange, mercy, priest, scourge, Tantalize, tribulation, utopian, hybrid.

3. State the chief peculiarities of poetic diction as distinguished from prose diction.

4. Describe the distinctive features of the English Sonnet in regard to (1) treatment of subject, (2) metre

5. Name the principal prose writers of the reign of Elizabeth with their works, and write a short criticism of the Ecclesiastical Polity of Hooker.

6. Criticise the statement "that Shakspeare deviated from the dramatic unities of time, place and action, laid down by the ancients:" state how far such deviation is both allowable and necessary. Illustrate your answer by reference to any of the plays of Shakspeare.

7. Write a short account of the Vision of Piers the Ploughman.

Education Department, Ontario.

JULY EXAMINATIONS, 1882.

FIRST CLASS TEACHERS—GRADES A AND B

MILTON, POPE, AND JOHNSON.

TIME—TWO HOURS AND A HALF.

"A man may be a heretick in the truth; and if he beleeve things only because his Pastor sayes so, or the Assembly so determins, without knowing other reason, though his belief be true, yet the very truth he holds becomes his heresie. There is not any burden that som would gladier post off to another then the charge and care of their Religion. There be, who knows not that there be, of Protestants and professors who live and dye in as arrant an implicit faith as any lay Papist of Loretto. A wealthy man addicted to his pleasure and to his profits finds Religion to be a traffick so entangl'd and of so many piddling accounts, that of all mysteries he cannot skill to keep a stock going upon that trade. What should he doe? Fain he would have the name to be religious, fain he would bear up with his neighbours in that. What does he therefore but resolvs to give over toyling, and to find himself out som factor, to whose care and credit he may commit the whole managing of his religious affairs, som Divine of note and estimation that must be."

—*Areopagitica, pp.* 38 *and* 39, *Hales's edition.*

(i.) Explain the meaning of the first clause of the first sentence, of 'professors', 'arrant', 'implicit faith', 'lay Papist of Loretto', 'piddling', 'mysteries', 'skill', 'bear up with', 'factor'.

(ii.) Re-write the third sentence in modern and courteous English.

(iii.) Express in other words the meaning of the fourth sentence.

(iv.) Write an explanatory note on 'Assembly', and a geographical and historical one on 'Loretto'.

(v.) Explain the derivation of 'heretick', 'determins', 'arrant', 'implicit', 'mysteries'.

(vi.) Parse 'of' and 'that' in the last clause of the last sentence

2. Give an account of the subjects which occupied men's minds in England in the year in which *Areopagitica* was written.

3. Quote Pope's lines on vice, Bacon, Cromwell, 'the poor Indian', the pride of birth.

[OVER.

4. "Who first taught souls enslav'd, and realms undone,
Th' enormous faith of many made for one;
That proud exception to all nature's laws,
T' invert the world, and counterwork its cause?"

(i.) Parse 'souls', 'faith', 'exception', 'T' invert.'

(ii.) Express the meaning in other words.

(iii.) Give, in either Pope's words, or your own, his answer to the question.

5. Point out and illustrate what you consider Pope's chief merit and chief defect as a poet.

6. What does Matthew Arnold mean by saying that regularity, uniformity, precision, balance, are the qualities of a serviceable prose style? Explain fully.

7. Write a brief account of Johnson's literary work, and state clearly the nature of his literary and other influence upon his age.

Education Department, Ontario.

JULY EXAMINATIONS, 1882.

FIRST CLASS TEACHERS—GRADES A AND B.

ENGLISH AND CANADIAN HISTORY.

TIME—TWO HOURS AND A HALF.

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1. Reproduce Green's sketch of the character and career of Thomas Cromwell.

2. Describe, after Macaulay, the state of England at the accession of James II.

3. Sketch, after Hallam, the history of the English constitution during the reign of William III.

4. Explain the nature of the feudal system established in Canada by the French.

5. Write brief historical notes on Laval, the English standing army, and the High Commission Court.

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JULY EXAMINATIONS, 1882.

FIRST CLASS TEACHERS—GRADES A AND B.

ELEMENTARY GEOMETRICAL OPTICS.

TIME—TWO HOURS.

1. Give a concise non-mathematical description of what takes place when a divergent pencil of light falls upon -

(a) A plane mirror,
(b) A concave mirror, the origin of the pencil being in the axis,
(c) A convex mirror under conditions as in case *(b)*,
(d) A thick transparent plate of glass.

2. Two plane mirrors are inclined to one another at an angle e; investigate an expression for the deviation of the ray after successive reflexion at the surface of each mirror.

In what instruments is this principle of reflexion employed?

3. If a ray of light meet a prism and leave it at the same angle, (φ), and if μ be the index of refraction and e the angle of the prism,

$$\sin \varphi = \mu \sin \frac{e}{2},$$

and if δ be the deviation of the ray,

$$\mu = \sin\frac{\delta}{2}\left(\cot\frac{e}{2} + \cot \frac{\delta}{2}\right).$$

4. A prism whose section is an equilateral triangle is to be employed for producing total reflexion without refraction.

Determine the lowest allowable index of refraction for the substance forming the prism.

5. The object glass of a microscope consists of two convex lenses separated by an interval of two inches. The focal length of the first lens is 3 inches, and of the second 8 inches, and an object one-tenth of an inch in length is placed 4 inches in front of the first lens. Determine the position and size of the image.

6. While looking at the page of a book from a distance of 12 inches, I place a plate of glass ($\mu = 1.5$) upon the page. How does that affect the appearance of the print, and to what extent?

7. Explain the following terms employed in relation to telescopes:—Objective, Ocular, Positive Eyepiece, Negative Eyepiece, Amplifying Lens, Diaphragm, and state the purpose of each.

8. How much shorter would a Cassegrain's telescope be than a Gregorian if in each the focal length of the great speculum were 4 feet, that of the eyepiece 2 inches, and if the magnifying power were 100?

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JULY EXAMINATIONS, 1882.

FIRST CLASS TEACHERS—GRADES A AND B.

ANALYTICAL GEOMETRY.

TIME—TWO HOURS AND A HALF.

1. Shew that the general equation $Ax + By + C = 0$ represents a straight line.

Determine its intercepts on the axes, the angles it makes with the axes, and the length of the perpendicular on it from the origin (axes rectangular).

2. Obtain a general expression for all lines passing through the intersection of

$$\begin{cases} A\,x + B\,y + C = 0 \\ A'x + B'y + C' = 0 \end{cases}$$

and deduce from it the equations to (1) that which passes through the origin, and (2) that which is parallel to Ox.

3. Find the area of a triangle the co-ordinates of whose angular points are given, and thence shew that all triangles on the same base and of equal area are between the same parallels.

4. Shew that the equation

$$x^2 + y^2 + 2Ax + 2By + C = 0$$

represents a circle; and determine the constants in it that it may be touched by the co-ordinate axes and by $\frac{x}{a} + \frac{y}{b} - 1 = 0$.

5. Classify the curves

$$(1).\ 2x^2 - 3y^2 + xy + 5y - 2 = 0.$$
$$(2).\ x^2 + 2y^2 - 3xy - x + 4y + 1 = 0.$$

6. If $\alpha = 0$, $\beta = 0$, $\gamma = 0$, $\delta = 0$ be the equations to four straight lines, interpret the equations

$$(1).\ \alpha\beta + \gamma\delta = 0$$
$$(2).\ \alpha\beta + \gamma^2 = 0$$
$$(3).\ \alpha^2 + \gamma^2 = 0.$$

7. Find the tangent to the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ at the point (x', y'); and interpret your resulting equation when the point (x', y') is within or without the ellipse.

[OVER.

8. In an ellipse, centre C, Z is the foot of the perpendicular from the focus H on the tangent at P; shew that if R be the bisection of HP, then ZR, RC are in the same straight line.

9. Obtain the equation to the tangent to the conic $\frac{c}{r} = 1 + e \cos \theta$ in the form

$$\frac{c}{r} = e \cos \theta + \cos (\theta - \alpha);$$

and if PT,$P'T$ be tangents at P,P', and F be the focus, then FT bisects the angle PFP'.

10. A circle through the foci of an ellipse and the point N on the axis minor, cuts the axis minor again in T and the ellipse in P. Shew that PT, PN are tangent and normal to the ellipse.

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JULY EXAMINATIONS, 1882.

FIRST CLASS TEACHERS—GRADES A AND B.

ALGEBRA.

TIME—TWO HOURS AND A HALF.

1. If $a^2py + b^2x = a^2qy^3 + b^4 = (y-\beta)q + 1 + p^2 = (a-x)q + (1+p^2)p = a^2y^2 + b^2(x^2-a^2) = 0$, eliminate p, q, x and y, and obtain an equation involving the remaining quantities.

2, Show that the determinant

$$\begin{vmatrix} a\,b\,c \\ a'b'c' \\ a''b''c'' \end{vmatrix} = \frac{1}{b'}\left\{ \begin{vmatrix} a\,b \\ a'b' \end{vmatrix} \cdot \begin{vmatrix} b'c' \\ b''c'' \end{vmatrix} - \begin{vmatrix} a'b' \\ a''b'' \end{vmatrix} \cdot \begin{vmatrix} b\,c \\ b'c' \end{vmatrix} \right\},$$

and that the second form becomes indeterminate when b' becomes zero.

Evaluate the determinants—

$$\begin{vmatrix} 4 & 3 & 2 & 3 \\ 6 & 5 & 3 & 4 \\ 4 & 7 & 4 & 1 \\ 6 & 5 & 1 & 2 \end{vmatrix} \quad \text{and} \quad \begin{vmatrix} 0 & 1 & 1 & 1 \\ 1 & 0 & z^2 & y^2 \\ 1 & z^2 & 0 & x^2 \\ 1 & y^2 & x^2 & 0 \end{vmatrix}$$

3. Find an expression for the sum of n terms of the series

$$2 + 22 + 222 + 2222 + \dots$$

4. Revert the series,

$$y = 1 + \left(\frac{x}{2}\right) + \frac{3}{1.2}\left(\frac{x}{2}\right)^2 + \frac{3.5}{1.2.3}\left(\frac{x}{2}\right)^3 + \dots$$

and thence show that when $y = \frac{1}{2}$, $x = -3$.

5. If a, b, c, d be four consecutive terms of a series in which the fourth differences are approximately zero, show that the value of m, a term interpolated midway between a and b, is expressed by

$$\frac{1}{16}(5a + 15b + d - 5c).$$

6. Resolve $\dfrac{2}{(1+x-x^2)(1-x^2)}$ into its partial fractions.

[OVER.

7 If in the expansion of $(1+x)^n$ the co-efficients after the first term be denoted by n_1, n_2, n_3, &c., and if p_1, p_2, p_3, &c., denote like functions of p, an integer less than n, show by the expansion of $(1-x)^{-n}$ that when n is a whole number,

$$\frac{\lfloor\underline{n+p}}{\lfloor\underline{n-1}\ \lfloor\underline{p+1}} = n_1 + n_2p_1 + n_3p_2 + \dots n_{p+1}p_p.$$

8. Express $\sqrt{13}$ as a continued fraction and obtain the first five convergents.

9. A debenture pays interest n times a year at R per cent. per annum, and runs for t years. It is to be sold so as to yield the purchaser r per cent. upon his investment. Investigate a formula for its present value, all interest being compound.

10. Develope a^x according to ascending powers of x and explain the meaning of the constant co-efficient of x.

Education Department, Ontario.

JULY EXAMINATIONS, 1882.

FIRST CLASS TEACHERS—GRADES A AND B.

TRIGONOMETRY.

TIME—TWO HOURS AND A HALF.

1. State clearly what is meant by the terms *sine* and *tangent*, and write the value of each of these in terms of all the remaining goniometrical ratios.

2. Prove the following formulae:—

(*a*) $\text{Cos}\ (A+B) = \cos A \cos B - \sin A \sin B$.

(*b*) $\text{Sin}\ \frac{A}{2} = \frac{1}{2}(\sqrt{1+\sin A} - \sqrt{1-\sin A})$.

(*c*) $\text{Tan}\ \frac{A}{2} = \sqrt{\frac{1-\cos A}{1+\cos A}}$.

(*d*) $\triangle = Rr\,(\sin A + \sin B + \sin C)$,
where $\triangle$ is the area of a triangle whose angles are A, B, C, and the radii of whose circumscribed and inscribed circles are respectively R and r.

3. From the isosceles triangle having its basal angle double its vertical one find surd values for sine and cosine of 18° and of 54°.

4. In travelling over a distance of 13 miles directly northward, the stars are observed to have changed their meridian altitudes by $11'22''.6$. From these data calculate the earth's diameter.

5. Determine θ from the equation—

$$\text{Cos}\ 5\theta + \cos 3\theta + \cos\theta = 0.$$

6. Put into a form adapted to logarithmic computation, the equation—

$$\text{Cos}\ a = \cos b \cos c + \sin b \sin c \cos A.$$

7. Divide the angle whose tangent is $\frac{1}{10}$ into two angles whose tangents are each expressed by a simple fraction with unity in the numerator.

[OVER

8. If p be the perimeter of a regular polygon inscribed in a circle whose diameter is 1, and θ half the angle subtended at the centre by one of the sides—

$$\pi = p \sec \frac{\theta}{2} \,.\, \sec \frac{\theta}{4} \,.\, \sec \frac{\theta}{8} \ldots\ldots \text{ ad. inf.}$$

9. If the angle φ is given by the condition $\cos \varphi = a$, then $\frac{\varphi}{n}$ has n values. Explain this for any value of n greater than 2, and show what use is made of it when $n = 3$.

10. Through the centre of an equilateral triangle a line is drawn making an angle θ with the side BC, and cutting the other sides in the points X and Y.

If s be the side of the triangle, investigate an expression for the product $AX.AY$ in terms of s and θ.

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JULY EXAMINATIONS, 1882.

FIRST CLASS TEACHERS—GRADES A AND B.

CHAUCER.

TIME—TWO HOURS AND A HALF.

1. Re-write in modern English, line by line, the following passages:—

(*a*) "But of his craft to rikne wel the tydes,
His stremes and his dangers him bisides,
His herbergh and his mone, his lodemenage,
Ther was non such from Hull to Cartage."

(*b*) "Wel couthe he in eschange scheeldes selle.
This worthi man ful wel his wille bisette:
Ther wiste no man that he was in dette,
So estately was he of governaunce,
With his bargayns and with his chevysaunce."

2. Explain the meaning of the following lines:—

(*a*) Ful ofte tyme he had the bord bygonne.
(*b*) His eyen steep......That stemed as a forneys of a leede.
(*c*) Sownynge in moral manere was his speche.
(*d*) Therto he couthe endite, and make a thing,
Ther couthe no man pynche at his writyng.
(*e*) And yet he had a thombe of gold parde!
(*f*) And yit this maunciple settle here aller cappe.

3. Explain the expressions—"loken in every lith", "me mette", "my lief is faren on londe", "my sweven rede aright", "ne do no force of dremes", "so mot I the", "It is no nay", "forslouthe thy tyde", "He knew by kynde", "Real he was".

4. Give the meaning and derivation of the words—vernicle, palmer, pilgrim, lyveré, letuaries, anlas, parvys, daun, lymytour and dragges.

5. Define clearly the position of Chaucer's English with reference to the History of the English Language.

6. Describe the metre and versification of the Canterbury Tales, and state particularly the position which final -e holds in Chaucer's verse.

7. State the plan of the Canterbury Tales, as detailed in the Prologue.

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JULY EXAMINATIONS, 1882.

FIRST CLASS TEACHERS—GRADES A AND B.

DYNAMICS.

TIME—TWO HOURS AND A HALF.

1. A certain acceleration is represented by 32 when one foot and one second are the units of space and time. By what number will it be represented when 4 inches and 3 seconds are the units?

2. Obtain a formula for finding the space described in a given time by a body moving with given uniform velocity.

A body projected in the direction of a uniform acceleration describes a and b feet in the mth and nth seconds respectively. Find the space described in n-m seconds.

3. State Newton's Laws of Motion, giving illustrations of the third.

Explain the use of Atwood's machine in finding the acceleration due to gravity.

4. Find the work done in the following cases:—

   (1). Raising a body of given weight to a given height along a rough inclined plane (coeff. of friction μ) whose inclination is known.

   (2). Raising a window-blind of given dimensions and weight by means of a roller at its top.

5. When a particle is projected *in vacuo* at any inclination to the horizon, and subject only to the influence of gravity, its path is a parabola.

Shew also that the velocity at any point is the same as that acquired in falling freely from the directrix to that point.

6. If a particle be projected with velocity u and inclined at an angle α to the horizon, and at the same instant another particle be dropped from a point in the directrix of the parabolic path of the former, find where in the direction this point must be situated, that the particles may collide.

[OVER.

7. A string of length 4 feet and capable of supporting a weight of 10 lbs., has attached to one end a weight of 3 lbs., and is whirled in a horizontal circle. Find the angular velocity of the string when it breaks.

8. An elastic particle impinges on a fixed surface; obtain equations for determining its motion after impact.

One end of a smooth tube is at a given height above a horizontal plane on which the other end rests. An elastic particle descending the tube rebounds from the plane; shew that its *range* is greatest when the inclination of the tube to the horizon is $\tan^{-1}\dfrac{1}{e}$.

9. When bodies are in motion subject only to their mutual action, the velocity of their centre of gravity is uniform.

Education Department, Ontario.

JULY EXAMINATIONS, 1882.

FIRST CLASS TEACHERS—GRADES A AND B.

THE MERCHANT OF VENICE.

TIME—TWO HOURS AND A HALF.

1. Sketch the characters of Antonio and Jessica.

2. Write a brief critical account of the humorous element in this play.

3. Compare this play with any other by Shakspere, so as to make plain the stage of development which his mind and art had reached when it produced each.

4. Quote Portia's speech for mercy, and explain the meaning of the first line.

5. *Shylock*—

What judgment shall I dread, doing no wrong?
You have among you many a purchas'd slave,
Which, like your asses, and your dogs, and mules,
You use in abject and in slavish parts,
Because you bought them:—shall I say to you,
Let them be free; marry them to your heirs?
Why sweat they under burdens? let their beds
Be made as soft as yours, and let their palates
Be seasoned with such viands? You will answer:
The slaves are ours.—So do I answer you:
The pound of flesh, which I demand of him,
Is dearly bought, 'tis mine, and I will have it.
If you deny me, fie upon your law!
There is no force in the decrees of Venice.
I stand for judgment: answer; shall I have it?

—*Act IV, Scene* 1.

(i.) What are Shylock's motives for desiring the death of Antonio?

(ii.) Explain the meaning of 'parts' (l. 4).

(iii.) State the previous explanation of the force of the argument in ll. 13 and 14.

(iv.) Point out the run-on lines and the extra-syllable lines. What arguments have been based on the proportions of these in different plays of Shakspere?

[OVER.

6. Write explanatory notes on the following phrases and words:

I have thee on the hip.
Rialto, Eanling, Argosy, Notary,
Lichas, Signior, Penthouse, Usance.

7. By whom, and at what stage of the action of the play is each of the following passages uttered?

> "The man that hath no music in himself,
> Nor is not moved with concord of sweet sounds,
> Is fit for treasons, stratagems, and spoils."
>
> "Let me play the fool:
> With mirth and laughter let old wrinkles come,
> And let my liver rather heat with wine,
> Than my heart cool with mortifying groans."
>
> "How far that little candle throws his beams!
> So shines a good deed in a naughty world."

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JULY EXAMINATIONS, 1882.

FIRST CLASS TEACHERS—GRADE C.

ENGLISH LITERATURE.

TIME—TWO HOURS AND A HALF.

RICHARD II.

1. What, according to the Gardener, was the cause of Richard the Second's failure as a king? What is the verdict of history on this point?

2. Write a summary of Act IV.

2. By whom, and at what stage of the action of the play, are the following passages uttered?

"Of comfort no man speaks;
Let's talk of graves, of worms, and epitaphs."

"This precious stone set in the silver sea,
Which serves it in the office of a wall,
Or as a moat defensive to a house,
Against the envy of less happier lands."

"O, who can hold a fire in his hand
By thinking on the frosty Caucasus?"

"The setting sun and music at the close
As the last taste of sweets is sweetest last
Writ in remembrance more than things long past."

(i.) Complete the first quotation.

(ii.) Punctuate the last quotation, and express the meaning in other words.

ADDISON.

4. Reproduce Johnson's estimate of Addison's literary merits.

THE DESERTED VILLAGE.

5. Express in a series of propositions the political economy of the Deserted Village, quoting or referring to one passage in support of each.

[OVER

6. ‘ ’Twere well’, says one sage, erudite, profound,
Terribly arched and aquiline his nose,
And overbuilt with most impending brows,
‘ ’Twere well, could you permit the world to live
As the world pleases. What’s the world to you?’
—*Book III., ll.* 191-195.

(i.) Give, in Cowper’s words or your own, his answer to this question.

(ii.) To what criticism by Cowper is the quotation an objection?

7. Quote or refer to passages to show that Cowper is “an apostle of sensibility.”

8. What evidence is there in the third book of *The Task* as to the connexion between Cowper’s religious views and his insanity?

JOHNSON AND MACAULAY.

9. Reproduce Macaulay’s account of Boswell, of Johnson’s relations with the Thrales, and of the inmates of Johnson’s house.

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JULY EXAMINATIONS, 1882.

FIRST CLASS TEACHERS—GRADE C.

ENGLISH GRAMMAR.

TIME—TWO HOURS AND A HALF.

1. "*Plant* behind plant aspiring *in* the van the dwarfish in the rear *retired but* still sublime above the rest the statelier stand." —*Cowper—The Task.*

(i.) Arrange in metrical lines.
(ii.) Punctuate.
(iii.) Divide into propositions.
(iv.) Parse the italicized words.
(v.) Point out the words not native to the language.
(vi.) Explain the meaning.

2. (i.) Make a list of the pronouns; if you include any words in it which are sometimes pronouns and sometimes not, distinguish between their different uses; if you include *another* in your list, but not *the good*, explain your reason.

(ii.) Classify the pronouns, giving such a definition of each class you make as will comprehend all the words you put in it and no others.

N.B.—If you find it impossible to frame a logically satisfactory answer to any part of the question, point out clearly where the one you give is defective.

3. Correct, giving reasons, or justify:

My son is to be married to I know not who.
Thou never didst them wrong, nor no man wrong.
'Twas Love's mistake who fancied what it feared.
Sir Theodore was one of the few South Sea directors, who (though he lost considerably) did not lose his character.

4. Improve the English of the following paragraphs:

"The Capitulation and Treaty of Limerick were both performed by one man named Ginkel the general of William about 1791. Sarsfield held Limerick against William in 1689—1691 when it was forced to surrender of condition that the soldiers could go into foreign service and the Catholics have the same rights as a Protestant. Ginkel acquiesced in this which he should not have done as it was not in his power to form a treaty."

[OVER.

"They were planned by a clever servant, who to say all that can be said in his praise, is, that he is worthy of such a master as he has."

"Let us hear Dr. Lingard, to prevent his society from presenting whose work to me the sincere and pious Samuel Butler was ready to go down upon his knees."

"Sixteen have been sentenced to suffer death, but two only were left for execution."

"If your correspondent has any real object in view, he will furnish the names of the persons to whom he alludes; and I have no means of making this known to him except through the medium of your columns, and on receiving which he may be sure that the fullest investigation will be proceeded with."

5. Art
Arch
Ball
Bass
Bay
Blow
Boot
Bore
Bound
Bow
Bugle
Bull.

(i.) Each of the preceding combinations of letters represents more than one word. Explain the meaning of each word.

(ii.) Point out the cases in which a difference of meaning is marked by a difference of pronnnciation, and indicate these different pronunciations by means of rhyming words.

(iii.) State which words are derived from the Latin or Greek.

6. Account for the difference between the spelling of the terminations of

'deferred' and 'differed,'
'employed' " 'defied,'
'the Henrys' " 'miseries,'
'infallible' " 'incurable,'
'saddest' " 'longest.'

Education Department, Ontario

JULY EXAMINATIONS, 1882.

FIRST CLASS TEACHERS—Grade C.

GEOGRAPHY.

Time—Two Hours.

1. Trace the course of the following rivers, naming the chief towns on their banks:—the Vistula, Garonne, Tagus, Shannon, and Rhone.

2. Describe, geographically, Heligoland, Malta, Constantinople, Londonderry, Singapore, Halifax, Jamaica and Hong-Kong.

3. Draw a map of Ontario, showing the direction of the principal rivers, the position of the cities and the chief lakes.

4. Write a geographical description of the Bengal Presidency.

5. Name and describe the position of the scenes of the chief events in the American Revolution.

6. Describe the position of Queenston Heights, Chateauguay, Richmond (U.S.), Monongahela, Pampeluna, Tilsit, Borodino, Sadowa, Sedan, and Arcola.

7. Draw an outline map of England and Wales, showing the direction of the Thames, Severn, Mersey, Tyne and Ouse, and the position of Leeds, Sedgmoor, Barnet, Oxford, Bristol, Hull, Naseby, Dover, Canterbury and Exeter.

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FIRST CLASS TEACHERS—Grade C.

ARITHMETIC.

Time—Three Hours.

(All work must be purely Arithmetical.)

1. Explain fully why you double the quotient for a new divisor in extracting the square root of a number; and, what is the meaning of the numbers 30 and 300 which appear in the common method of extracting the cube root.

2. A wine merchant buys a barrel of wine (32 gals.) for $25 and sells it at $1.50 per gallon. The leakage amounts to two-fifths of a gill per day; and his living expenses to $510 per year. How many barrels per year must pass through his hands in order to cover the whole expense of his business?

3. A person buys a horse upon borrowed money for which he pays 6 % per annum. The horse earns 70 cents daily and costs ½ per cent. upon his purchase price for daily keeping. The owner sells him at the end of a year for $50, and realizes $132.40 upon his whole transaction. What did the horse cost?

4. A mortgage drawn March 1st, 1878, for $4000 is to be paid in 8 annual instalments of $500 each, with interest at 4 % per annum. It, having made the payments regularly, is offered for sale on Sept. 15th, 1881. What should it bring, money being worth 6 % per annum?

5. Given that 772 pounds raised 1 foot represents the amount of heat required to warm 1 pound of water through 1°F, and that 1°F. is equal to $\frac{5}{9}$°C., and that 39.37 inches is equal to 1 metre, and that a cube of water one-hundredth of a metre upon the edge weighs 1 gram, how many grams raised 1 metre will represent 1 gram of water warmed through 1°C?

6. A specimen of galena yields 82 % of its weight in lead, and a cube of the lead one-fifth of an inch upon its edge yields a sphere of silver .027 inches in diameter. If the density of the lead be 11.3 and of silver 10.5. and if silver be worth 84 cents per ounce, what value of silver is contained in one ton of galena?

[OVER

7. A flume is 2 feet wide at the bottom, 3 feet at the top and 4 feet deep, and it is filled to a height of $2\frac{1}{2}$ feet with water. It supplies a turbine from which the water issues through 12 circular orifices each 1 inch in diameter with a velocity of 12 feet per second. Find the mean velocity per second with which the water moves along the flume.

8. A piece of lead in the form of a prismoid is 3 inches by 4 upon one base and 5 inches by 6 upon the other, and 10 inches high. If it is pressed into the form of a sphere what will be its radius?

Education Department, Ontario.

JULY EXAMINATIONS, 1882.

FIRST CLASS TEACHERS—GRADE C.

ENGLISH HISTORY.

TIME—THREE HOURS.

1. Describe concisely the relation of William III. to the political parties of his reign.

2. "William the Third's reign is, no doubt, one of the most important in our constitutional history, on account of those beneficial alterations in our law to which it gave rise." Describe briefly the alterations to which Hallam refers in this passage.

3. "Walpole was not only the first English Peace Minister: he was the first English Minister who was a great financier."

Describe in detail the policy of Walpole's Administration in the two aspects here referred to.

4. Describe briefly the career and character of William Pitt, Earl of Chatham.

5. Sketch the progress of British power in India during the reigns of George II. and George III.

6. Describe the policy of the younger Pitt towards France on the outbreak of the Revolution. Contrast his policy with that of Burke, and state briefly the aim and influence of Burke's "Reflections on the French Revolution".

Education Department, Ontario.

JULY EXAMINATIONS, 1882.

FIRST CLASS TEACHERS—GRADE C.

ALGEBRA.

TIME—THREE HOURS.

1. Solve the equations

$$(1).\quad \begin{cases} x^2 - xy + x = 9 \\ 4y^2 - 3xy - 2y = -7. \end{cases}$$

$$(2).\quad x^3 - 2x^2y - 3xy^2 = 10 = x^2 - 3xy.$$

Discuss the values of x, y, z, in the equations

$$a = \frac{x - y}{x + y},\ b = \frac{y - z}{y + z},\ c = \frac{z - x}{z + x}.$$

2. What value of x will make $x^2 - 2x$ a minimum.

Apply your method to shew that the square is the greatest rectangle that can be inscribed in a given circle.

3. In the solution of $ax^2 + bx + c = 0$, interpret the results when

$$(1).\ a = b = 0;\quad (2).\ b^2 \overset{<}{\underset{>}{=}} 4ac.$$

4. If α, β, be the roots of $x^2 + px + q = 0$, and α', β', those of $x^2 + px + \frac{1}{9}(2p^2 + q) = 0$, then α, α', β', β, form an Arithmetic series.

5. Determine the conditions that $ax^4 + bx^2 + c$ and $cx^4 + bx^2 + a$ may have a common divisor of the form $x^2 + px + q$.

6. When is one quantity said to vary as another.

If $x \propto y \propto z$, shew that constants k, l, m exist such that

$$l(x - ky) = m(y - lz) = k(z - mx).$$

7. The sum of n terms of a certain series is $\frac{1}{3}n(n + 1)(n + 2)$; shew that the sum of the differences between the 1st and 2nd, 2nd and 3rd, ... $\overline{n - 1}$th and nth terms is $(n - 1)(n + 2)$.

[OVER.

8. Find the sum to n terms of a Geometric series, having given the first term and common ratio.

If between each pair of the quantities x, x^2; x, x^3; x, x^4; ...... n Geometric means be inserted, and r_1, r_2, ... be the common ratios,

then $$\frac{r_2}{r_1} + \frac{r_3}{r_2} + \ldots\ldots + \frac{r_{n+1}}{r_n} = n.x^{\frac{1}{n+1}}.$$

9. In forming the combination of n things r together, find for what value of r the number of combinations is greatest.

A committee of 8 is to be selected by taking a certain number (a) from a party of 13, and the remainder from a party of 8. What is the value of a that the selections may be made in the greatest number of ways; and how often will A of the first party and B of the second party find themselves in company?

10. Assuming the Binomial Theorem to hold for positive integral indices, shew that it holds for positive fractional indices.

Verify
$$\frac{1}{\sqrt{3}} = \frac{1}{2}\left\{1 + \frac{1}{2^3} + \frac{1.3}{\underline{\lfloor 2}} \cdot \frac{1}{2^6} + \frac{1.3.5}{\underline{\lfloor 3}} \cdot \frac{1}{2^9} + \ldots\ldots\right\}$$

By equating co-efficients of x^r in $(1+x)^n$ and $\left(1 - \frac{x}{1+x}\right)^{-n}$,

shew that
$$\frac{n(n+1)\ldots\ldots(n+r-1}{\underline{\lfloor r}} - \frac{n(n+1)\ldots\ldots(n+r-2)}{\underline{\lfloor r-1}} \cdot \frac{r-1}{1} + \frac{n(n+1)\ldots\ldots(n+r-3)}{\underline{\lfloor r-2}} \cdot \frac{(r-2)(r-1)}{\underline{\lfloor 2}} + \ldots\ldots = \frac{n(n-1)\ldots(n-r+1)}{\underline{\lfloor r}}.$$

Education Department, Ontario.

JULY EXAMINATIONS, 1882.

FIRST CLASS TEACHERS—GRADE C.

EUCLID.

TIME—THREE HOURS.

1. If from the ends of a side of a triangle there be drawn two straight lines to a point within the triangle, they shall contain an angle greater than that contained by the other two sides of the triangle.

If ABC be the triangle, determine the areas within which D must be taken so that the angle BDC may be greater than BAC; D being without the triangle, but on the same side of BC that A is.

2. Triangles on equal bases and between the same parallels are equal.

In the triangle ABC construct a parallelogram FBDE half of the triangle, such that the angle at B shall be common to both triangle and parallelogram, and the point E in the side AC.

3. If the opposite angles of a quadrilateral be together equal to two right angles, the greatest angle of the quadrilateral will be the one nearest to the line joining the points in which opposite sides meet when produced.

4. Shew that chords in a circle increase in magnitude as they near the centre, and attain their maximum value when they become diameters.

A is a point on the circumference of a circle whose centre is C, and AB is any chord. Find the position of AB when the area of the triangle CAB is greatest.

5. Define similar segments of circles, and shew how to cut off from a given circle a segment similar to a given segment of another circle.

6. Shew how to find the position of a point equidistant from three given straight lines.

When the portions of each of these lines intercepted by the other two are 3, 4, 5, find the distance of this point from the lines.

[OVER

7. Shew how to describe a circle about any given equilateral and equiangular figure.

Granted that a circle can be described about a given irregular rectilineal figure, shew how to describe it.

8. Parallelograms which have one angle of the one equal to one angle of the other, and their sides about the equal angles reciprocally proportional are equal to one another.

In question 2 shew that the parallelogram which is half of the triangle is the greatest one that can be inscribed in the triangle in the manner indicated.

9. Shew how to place a mean proportional between two given straight lines.

Obtain a general expression for the number of mean proportionals that by Euclid's method can be placed between two given straight lines.

10. Prove the proposition in Book VI. of which Prop. 47, Bk. I., is a particular case.

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JULY EXAMINATIONS, 1882.

FIRST CLASS TEACHERS—GRADE C.

COMPOSITION.

TIME—ONE HOUR.

Write a composition on one of the following topics:—

The Irish Question.

The Uncertainty of Life.

The Difference between Mechanical and Intellectual Teaching.

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JULY EXAMINATIONS, 1882.

FIRST CLASS TEACHERS—GRADE C.

CHEMISTRY.

TIME—TWO HOURS.

1. If a platinum spiral, heated to redness at its lower end, be plunged into a flask containing a few drops of strong solution of ammonia, the platinum spiral becomes brilliantly incandescent and continues to glow for a great length of time, white clouds of ammonium nitrite being formed at the same time.

(i.) Explain the cause of the increase of the heat of the platinum spiral evinced by its becoming incandescent.

(ii.) Explain the function of the platinum in this reaction.

(iii.) Could a steel spiral be substituted for the platinum with the same effect? Give reasons.

(iv.) Write out the equation representing the chemical reaction taking place within the flask.

2. Describe a method for obtaining *pure* nitrogen dioxide.

3. A mixture of 15 C.C. dry air with 8.2. C.C. of dry hydrogen were exploded in a Eudiometer. After explosion the gas remaining in the Eudiometer measured 13.8. C.C. Calculate from these data the quantity of oxygen by volume present in 100 vols of dry air.

4. By analysis the percentage composition of a certain compound was found to be

$$\begin{aligned} N &= 26.232 \\ H &= 7.49 \\ Cl &= 66.27 \\ \hline & \ 99.992 \end{aligned}$$

Calculate from these data the formula of the compound.

5. Six glass cylinders are respectively filled with nitrogen monoxide, oxygen, carbon monoxide, sulphur dioxide, carbon dioxide and nitrogen dioxide. What experiments would you perform to identify each individual gas?

[OVER

6. Represent by diagram the apparatus required for preparing sulphur trioxide.

7. A glass cylinder (capacity 580 C.C.) furnished with platinum electrodes was filled at 2°C. and 763^{mm}P. with oxygen. The enclosed gas was then subjected for a length of time to electric discharges.

Calculate the weight of ozone formed on the supposition that the contraction in volume equalled $\frac{1}{12}$.

8. Describe the method of preparing platinum black, and explain its action upon a jet of hydrogen.

9. What precaution must be observed safely to conduct the experiment for preparing Nitrogen from Ammonia and Chlorine ?

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JULY EXAMINATIONS, 1882.

FIRST CLASS TEACHERS—GRADE C.

HYDROSTATICS.

TIME—TWO HOURS AND A HALF.

1. A cylindrical vessel is filled with a heavy liquid. Find the ratio of the pressure on the cylindrical surface to the weight of the entire liquid in the vessel.

2. Show how the specific gravity of liquids may be ascertained by means of two tubes communicating at their lower extremities.

3. A wooden box, with a double bottom constituting an air chamber, contains 2 cubic yards of wood, spec. gr. =0.66, 1.3 cubic yards of air spec. gr. =0.0012, $\frac{1}{5}$ cubic yard of rock, spec. gr. = 3.01. When filled with river water what weight of lead, spec. gr. 11.3, thrown into the box will just sink it? (Weight of one cubic yard of river water = 1683 lbs.

HEAT.

1. How far apart should steel rails, which at 40°F. are 18 feet long, be laid to allow sufficient room for expansion at the temperature 90°F., when the temperature at the time of laying the rails is 34°F. (Steel expands 1 inch in 926 inches when raised from 32°F. to 212°F.)

2. To what temperature in degrees C. must a test tube be heated that $\frac{1}{7}$, $\frac{1}{5}$ and $\frac{1}{3}$ of the air it originally contained may be successively driven out of it? The temperature at the time of experiment being at 0°C. and the pressure remaining constant.

3. A cylinder is filled with steam at 133.91°C. and 3 atmospheres pressure. What will be the tension of the steam
   (i.) When its volume is diminished one-half?
   (ii.) When its volume is doubled?
(The temperature in i. and ii. remaining constant.)

4. State the conditions which affect the evaporation of liquids.

[OVER.

5. Show that the method of mixture is applicable both for obtaining the specific heat and latent heat of a body.

6. What becomes of the heat which is said to be rendered latent during the change of the state of aggregation of a body from the solid to the liquid and from the liquid to the gaseous state?

7. Describe an experiment to show that the conductive power of liquids is very small, and explain the manner in which heat is diffused through liquids and gases.

8. If 3 lbs. of snow at —8°C. be mixed with 7 lbs. of water at 80°C. what will be the resulting temperature? (Spec. heat of ice = 0.5. Latent heat of water =79.)

Education Department, Ontario.

JULY EXAMINATIONS, 1882.

FIRST CLASS TEACHERS—GRADE C.

ELEMENTARY MECHANICS.

TIME—TWO HOURS AND A HALF.

1. Explain clearly what is meant by "the centre of gravity."

What are the three kinds of statical equilibrium, and how are they connected conditionally with the centre of gravity?

2. Where is the centre of gravity of a triangle situated?

A plate of metal of uniform thickness is in the shape of a trapezoid; its parallel edges are 12 and 20, and the distance between them is 8; how far from the longer edge is the centre of gravity?

4. Show how, by construction, to find the "resultant" of two forces.

Under what conditions will they not have a resultant?

A weight of 100 is suspended by a rope 20 feet long; what horizontal force is required to draw it 6 feet out of the vertical line?

4. A right-angled triangle whose sides are 3, 4 and 5, and whose unit of surface weighs 1 pound is suspended by a cord attached to the middle point of the longest side; what weight must be placed upon the acute angle to keep the long side horizontal?

5. What is uniformly accelerated, and what uniformly retarded motion? Give examples of such.

What are the relations existing among the quantities denoting velocity, space, force and time in such motion?

A stone dropped from the top of a tower strikes the earth after $2\frac{1}{2}$ seconds; what is the height of the tower?

6. A heavy cylinder would take longer to roll down an inclined plane than to slide down it without friction. Explain why.

[OVER

7. Show that the force which acts upon the pendulum to bring it back to the centre of its swing is, when the arc is small, approximately as the distance of the pendulum bob from that centre.

The length of a seconds pendulum being 39.14 inches, how much too long is the pendulum of a clock which loses 40 seconds per day?

8. Explain the principle of virtual velocities, and show how you would apply it practically to find the relation of the power to the weight in a complicated system of pulleys.

9. What is meant by the term "energy" in mechanical physics?

If a body be projected upwards, show what changes take place in the character of its energy from the time it leaves the earth's surface until it returns to it again.

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JULY EXAMINATIONS, 1882.

INTERMEDIATE.

ENGLISH LITERATURE.

TIME—TWO HOURS AND A QUARTER.

*** The value in the margin, opposite each question, under the heading M., is for the matter of the answer; the additional value, under F., is for its literary form.

Values.

M. F.

I.—GOLDSMITH'S DESERTED VILLAGE.

1. "Sweet Auburn! parent of the blissful hour,
Thy glades forlorn confess the tyrant's power.
Here, as I take my solitary rounds,
Amidst thy tangling walks and ruined grounds,
And, many a year elaps'd, return to view
Where once the cottage stood, the hawthorn grew,
Remembrance wakes with all her busy train,
Swells at my breast, and turns the past to pain."

7 (a) Specify the words not of English origin in this extract, distinguishing those of direct Latin origin from those derived thence indirectly through the French by the letters L. and LF. respectively.

3 1 (b) Analyze the passage from "Here" to "train".

2 1 (c) Explain the meaning of the following phrases:—*parent of the blissful hour; confess the tyrant's power; swells at my breast.*

5 2 2. Quote the description of the village preacher, beginning with the line—
"Thus to relieve the wretched was his pride."

2 3. Give a brief outline of Goldsmith's career, mentioning his chief poetical and dramatic works.

2 4. "Downward they move, a melancholy band,
Pass from the shore, and darken all the strand."
Explain the meaning of the last line.

[OVER.

Values.

M. | F.

II.—COWPER'S TASK—BK. III.

1. "Me, therefore, studious of laborious ease,
Not slothful; happy to deceive the time,
Not waste it; and aware that human life
Is but a loan to be repaid with use,
When He shall call his debtors to account,
From whom are all our blessings; bus'ness finds
Ev'n here: while sedulous I seek to improve,
At least neglect not, or leave unemploy'd
The mind He gave me; driving it, though slack
Too oft, and much impeded in its work
By causes not to be divulg'd in vain,
To its just point—the service of mankind."

4 | 2 (*a*) Write out the whole passage in prose, so as to show that you fully appreciate its meaning.

4 (*b*) Parse: *Me, studious* (l. 361); *waste,* (363); *to be repaid* (364); *sedulous* (367); *neglect* (368); *slack* (369).

2 (*c*) What is peculiar in the use of the words "studious" (l. 361), and "sedulous" (l. 367), in respect of either sense or construction, and what influence is traceable in this use?

1 (*d*) Explain the allusion in l. 365; also in the words "though slack—in vain" (369-71).

1 (*e*) One edition has a comma at the end of l. 369. Show how this would alter and destroy the sense.

2 (*f*) Derive *sedulous, divulge.*

2. Explain the italicised phrases in the following passages:

1 (i.) What chance that I . . . .
Should speak to purpose, or with better hope
Crack the satiric thong?

1 (ii.) . . . True pray'r
Has flow'd from lips *wet with Costalian dews.*

2 (iii.) His warm but simple home, where he enjoys
With her who shares his pleasures and his heart,
Sweet converse, sipping calm the *fragrant lymph*
Which neatly she prepares.

3 (iv.) Yet *gnats* have had, and *frogs and mice* long since,
Their eulogy; those sang the *Mantuan bard,*
And these *the Grecian* in ennobling strains,
And in thy numbers, Phillips, shines for aye
The solitary *Shilling.*

1 (v.) *Crape* and *cock'd pistol* and the whistling ball
Sent through the traveller's *temples.*

Values.		
M.	F.	
1		3. Account for the title of the poem.
3	3	4. Describe the condition of literature at the time of Cowper's appearance as a poet, and estimate the effect produced by his poetry.

III.—ADDISON'S SIR ROGER DE COVERLEY.

M.	F.	
		1. My worthy friend Sir Roger, when we are talking of the malice of parties, very frequently tells us an accident that happened to him when he was a school-boy, *which* was at the time when the feuds ran high between the Roundheads and Cavaliers. This worthy knight, being then but a stripling, had occasion to inquire *which* was the way to St. Anne's Lane, upon *which* the person *whom* he spoke to, instead of answering his question, called him a young popish cur, and asked him who had made Anne a *saint.* The boy, being in some confusion, inquired of the next he met which was the way to Anne's Lane, but was called a prick-eared cur for his pains, and instead of *being shewn the way,* was told that she had been a saint before he was born, and would be one after he was hanged.
3		(*a*) Parse the words italicised.
3	1	(*b*) *Roundheads; Cavaliers; prick-eared.* Explain the origin and meaning of these terms.
3	1	(*c*) Give some account of the state of political parties in Addison's time, and of the part he took in them.
		2. Write explanatory notes on the words italicised in the following passages:
2		(i.) A *setting dog* that he has *made* himself.
1		(ii.) He *wishes* Sir Roger does not harbour a Jesuit.
2		(iii.) I suppose this letter will find thee *picking of daisies*, or *smelling to a lock of hay.*
2		(iv.) *Sir Andrew* is grown the cock of the club . . . . and will make every mother's son of us *commonwealth's men.*
3		(v.) I *was* no sooner come into *Gray's Inn* Walks *but* I heard my friend.
6	1	3. Give some account of the clubs and coffee-houses of Addison's time, and show how the former differ from those of the present day.
2		4. Who were the *Mohocks* mentioned in the *Spectator* ?
3	1	5. Sketch the character of Will Wimble.

Education Department, Ontario.

JULY EXAMINATIONS, 1882.

INTERMEDIATE.

ENGLISH GRAMMAR.

TIME—THREE HOURS.

Values.

1. "And, truly, he who here
Hath run his bright career,
And serv'd men nobly, and acceptance found,
And borne to light and right his witness high,
What can he better crave than then to die,
And wait the issue, sleeping underground?
Why should he pray to range
Down the long age of truth that ripens slow,
And break his heart with all the baffling change
And all the tedious tossing to and fro?

For this and that way swings
The flux of mortal things,
Though moving inly to one far-off goal.
—What had our Arthur gain'd, to stop and see,
After light's term, a term of cecity,
A Church once large and then grown strait in soul?"
— MATTHEW ARNOLD, *on the Death of Dean Stanley.*

18 *(a)* Analyze lines 11 to 16.

10+5 =15 *(b)* Write the same lines in your own words, so as to show that you fully understand the passage. (Note to the Sub-Examiner—The second value is for the literary form of the answer.)

10 *(c)* Parse *to die* (l. 5), *underground* (6), *break* (9), *this and that way* (11), *stop* (14).

9 *(d)* Explain the meaning, and give the etymology of *flux* (l. 12), *inly* (13), *cecity* (15), *strait* (16); also explain *light's term* (15).

2. Correct any errors in the following sentences, giving your reasons for each correction:—

4 (i.) "The time of Defoe was the age of Queen Anne, King William and his descendants."

[OVER.

Values.

2 (ii.) "Cowper had the power to knit the thong of satire, it sometimes seems, in quite equal strength to Pope. Take him all in all, we prefer him far before Pope."

2 (iii.) The myrtles and ivy of sweet two-and-twenty
Are worth all your laurels, though ever so plenty.

4 (iv.) The isles of Greece, the isles of Greece,
Where burning Sappho loved and sung,
Where grew the arts of war and peace,
Where Phœbus rose and Delos sprung.

4 (v.) No event is too extraordinary to be impossible.

2 (vi.) "'T was in Trafalgar's bay
We saw the Frenchman lay."

4 (vii.) A butcher bought two cows from two men who offered them for sale. The butcher had immediately slaughtered one of the animals, and took both the hide and carcase to the city. On the same day the owner traced it to the butcher's possession.

4 (viii.) "An indissoluble tie had been formed between them, and were it not for a return of his malady, their meditated marriage would, in all probability, have subsequently taken place."

4 (ix.) "When we consider what care she had taken of the poet, it is not unpardonable on her part to have shown some feelings of jealousy."

4 (x.) "The man was thought to be dead, but after pumping the water out of his stomach he began to show signs of returning consciousness."

4 (xi.) "A most interesting feature will be the submission of a pledge to support prohibition to the candidates. If the candidates refuse to recognize the prohibitionists they are determined to place a third man in the field on that issue."

2 (xii.) "If not more than 30,000 settlers will go in this year, there are already in the country more than enough non-producers."

4 (xiii.) "You have no idea how that this place is changed. It is pretty near built over now."

4 (xiv.) "The ball and concert season have now commenced. The Prince is very popular, and he appears to be liked every place he goes."

2 (xv.) "This is the man whom I heard was ill."

2 "You was saying that neither I nor you are well."

Values.	
10	3. Explain and give the origin of the phrases—*verb sap.*; *infra dig.*; *bizarre*; *boycott*; *solecism.*
6	4. Spell, phonetically—*nonchalant*, *ennui*, *bronchitis*, *penchant*, *éclat*, *depot.*
8	5. Distinguish between *counsel* and *council*; *practise* and *practice*; *pérfume* and *perfùme*; *compliment* and *complement.*
4	6. Accentuate—*illustrate*, *farrago*, *homœopathist*, *photographer.*
14	7. Give the rules for the use of shall and will, illustrating by examples.
10	8. Give the full etymology of the following words:—beef, chain, farrow, admiral, praise, due, dish, priest, fishmonger, companion.
15	9. Give fifteen English derivatives from *facio.*
9	10. Mention three of the commonest faults in composition, giving examples of each.

Education Department, Ontario

JULY EXAMINATIONS, 1882.

INTERMEDIATE.

GEOGRAPHY.

Time—Two Hours.

Values.

40 1. (i.) Name in order, beginning at the north and ending at Mexico, the Provinces of the Dominion and the States of the American Union on the eastern side of North America that possess one or more seaports; (ii.) name an important seaport in each; (iii.) state the chief export or exports from each such seaport; and (iv.), if it is situated at the mouth of, or upon a large river, name that river.

20 2. (i.) Contrast the physical characteristics of Northern and Southern Europe.

(ii.) Arrange the governments of the different European states under the following heads:—Republics, Limited Monarchies, Absolute Monarchies.

20 3. (i.) Draw an outline map of Hindostan; (ii.) mark on it the names and courses of three important rivers, and the names and positions of the chief mountain ranges and of four large cities.

10 4. (i.) Name five African lakes; and (ii.) state with regard to each whether it is north of, south of, or on the equator.

10 5. Explain why, though Canada is nearer the sun in January than in July, the weather is warmer in the latter month.

Education Department, Ontario

JULY EXAMINATIONS, 1882.

INTERMEDIATE.

DICTATION.

TIME—THIRTY MINUTES.

Note for the Presiding Examiner—This paper must not be seen by the Candidates. It is to be read to them *three times—first*, at the ordinary rate of reading, the Candidates simply paying attention; *secondly*, slowly, the Candidates writing; *thirdly*, for revise.

The farmer imagines power and place are fine things. But the President has paid dear for his White House. It has commonly cost him all his peace and the best of his manly attributes. To preserve for a short time so conspicuous an appearance before the world, he is content to eat dust before the real masters who stand erect behind the throne. Or, do men desire the more substantial and permanent grandeur of genius? Neither has this an immunity. He who by force of will or of thought is great, and overlooks thousands, has the charges of that eminence. With every influx of light, comes new danger. Has he light? He must bear witness to the light, and always outrun that sympathy which gives him such keen satisfaction, by his fidelity to new revelations of the incessant soul. He must hate father and mother, wife and child. Has he all that the world loves and admires and covets? He must cast behind him their admiration, and afflict them by faithfulness to his truth, and become a by-word and a hissing.

This Law writes the laws of cities and nations. It is in vain to build or plot or combine against it. Things refuse to be mismanaged long. Though no checks to a new evil appear, the checks exist and will appear. If the government is cruel, the governor's life is not safe. If you tax too high, the revenue will yield nothing. If you make the criminal code sanguinary, juries will not convict. If the law is too mild, private vengeance comes in. If the government is a terrific democracy, the pressure is resisted by an overcharge of energy in the citizen, and life glows with a fiercer flame. Nothing arbitrary, nothing artificial can endure. The true life and satisfactions of man seem to elude the utmost rigours or felicities of condition, and to establish themselves with great indifferency under all varieties of circumstance. Under all governments the influence of character remains the same,—in Turkey and in New England about alike. Under the primeval despots of Egypt, history honestly confesses that man must have been as free as culture could make him.

Education Department, Ontario.

JULY EXAMINATIONS, 1882.

INTERMEDIATE.

ARITHMETIC.

TIME—THREE HOURS.

Values.

10 1. The fore and hind wheels of a carriage are 9 and 12 feet in circumference respectively. There are two points, one in each circumference, at present in contact with the ground. Shew that as the carriage moves on these points can never at the same time be the highest points of each wheel.

8 2. Reduce $\left\{ \dfrac{5\frac{1}{5} - \frac{1}{4} \text{ of } 2\frac{2}{7}}{\frac{3}{5} \text{ of } 4\frac{1}{6} + \frac{1}{12}} - \dfrac{859}{1085} \right\}$ of 3 lbs. to the fraction of 5 tons.

7 3. *Prove* that $.48\dot{7}3\dot{2}$ is equal to $\dfrac{48684}{99900}$.

8 4. Find the present value of $320.00, due two years hence, at 8 per cent. per annum, compound interest.

9 5. Find approximately in how many years a given sum of money will double itself at 15 per cent. per annum, compound interest.

9 6. How large a bill of exchange on Paris can be bought for $1500.00 currency, exchange being at the rate of $1 for 5.25 francs, and gold being at a premium of $8\frac{1}{2}$ per cent.?

10 7. On July 10th a banker discounts a note for $500.00, made May 10th, at six months, at the rate of 8 per cent. per annum. At what rate does he receive interest on his money?

13 8. A. sells an article at a certain advance per cent. on the cost to B., who, in turn, at the same advance per cent., disposes of it for $19, finding that had he sold for $13 he would have lost per cent. $1\frac{1}{4}$ of what he now gains per cent. What did A. pay for the article?

[OVER

Values.

13 9. Equal weights of gold and silver are in value as 20 to 1; and equal volumes are in value as 1284 to 35. A certain volume is composed of equal weights of gold and silver; find how many times more valuable the same volume would be were it composed wholly of gold.

13 10. The volume of a sphere is found by multiplying the cube of the radius by 4.1888; and the area of a circle by multiplying the square of the radius by 3.1416. Find the area of a circle which by rotating about a diameter will describe a sphere whose volume is 1 cubic foot.

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JULY EXAMINATIONS, 1882.

INTERMEDIATE.

HISTORY.

TIME—TWO HOURS AND A HALF.

Values.	
14	1. Sketch the gradual extension of the Roman empire from the termination of the Second Punic War to the death of Julius Cæsar.
6	2. Give a brief outline of the Roman method of Provincial Government.
14	3. State clearly what were the political abuses which the Gracchi attempted to reform, and in how far they were successful.
10+6 =16	4. Relate briefly the history of the struggle of the barons with King John and his successor, and specify the principal provisions of Magna Charta.
6	5. Show why the loss of England's possessions in France was beneficial to the English people.
4+4+ 8=16	6. Sketch the policy of Wolsey and Thomas Cromwell, and the growth of despotic power under the Tudors.
7+5= 12	7. Describe the condition of Canada during the administration of Champlain, and give a sketch of that governor's voyages and explorations.
4	8. Give an account of the first founding (under French rule) of Quebec, Montreal, Kingston and Toronto, with dates, and names of founders.
12	9. What were the terms of the Union between Upper and Lower Canada in 1841, and on what were they based?

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JULY EXAMINATIONS, 1882.

INTERMEDIATE.

ALGEBRA.

TIME—TWO HOURS AND A HALF.

Values.

1. Form an expression symmetrical with respect to
1 x, y, z, u, similar to $x^3 + y^3 + z^3 - 3xyz$; and write down
3 the quotient on dividing it by $x + y + z + u$.

4 2. Factor $ax^3 - (a + b)(x - y)xy - by^3$.
Deduce, or find by other means, the factors of
5 $(a + b)^3(x + y) - (x + 2y + z)(a - c)(a + b)(b + c) - (b + c)^3(y + z)$.
Obtain four different relations between the quantities
5 a, b, c, d, for any one of which the expression

$$4(ad - bc)^2 - (a^2 + d^2 - b^2 - c^2)^2$$

will vanish.

3. Find the lowest common measure, not being a fraction,
4 of the quantities $\dfrac{x^2 + 5x + 6}{x + 4}$ and $\dfrac{x^2 + 7x + 12}{x + 5}$.

4. Reduce to lowest terms the following fractions :—
5, 6 (1) $\dfrac{6x^5 - 5x^4 - 1}{x^5 - x^4 - x + 1}$. (2) $\dfrac{(a - b)(b - c)(c - a)}{(a - b)^3 + (b - c)^3 + (c - a)^3}$

5. (1) If $y + z + u = a$, $z + u + x = b$, $u + x + y = c$, $x + y + z = d$, then

5 $$\frac{1}{1 + \dfrac{a}{x}} + \frac{1}{1 + \dfrac{b}{y}} + \frac{1}{1 + \dfrac{c}{z}} + \frac{1}{1 + \dfrac{d}{u}} = 1.$$

3 (2) If $ax = b + c$, $by = c + a$, $cz = a + b$, then

$$\frac{1}{1 + x} + \frac{1}{1 + y} + \frac{1}{1 + z} = 1.$$

5 6. Solve the equation $ax^2 + bx + c = 0$.
What value of x will satisfy the equation

7 $$\frac{b - c}{x + a} + \frac{c - a}{x + b} + \frac{a - b}{x + c} = 0.$$

[OVER.

Values.

7. Solve the equations

4 (1) $\frac{7x}{3} - \left\{ \frac{1}{2} - \left(\frac{x}{3} - \frac{x-1}{2} \right) \right\} = \frac{4x-2}{5}.$

6 (2) $\frac{28}{x-4} - \frac{20}{x-3} = \frac{9}{x-5} - \frac{1}{x-1}.$

7 (3) $\begin{cases} x^4 + x^2y^2 + y^4 = 21 \\ x^2 + xy + y^2 = 7. \end{cases}$

8. Solve the equations

7, 8 $\left.\begin{array}{r} x + y + z = 6 \\ 3x + 2y - z = 4 \\ x + 3y + 2z = 13 \end{array}\right\} \qquad \left.\begin{array}{r} 3x - 2y + 5z = 4 \\ x - 4y + z = 1 \\ 4x - 6y + 6z = 5 \end{array}\right\}$

7 9. The edge of a cube is 3 feet. What must be taken as the unit of length that the number expressing the sum of the areas of the faces may be the same as that which expresses the sum of the lengths of the edges?

8 10. The hour, minute and second hands of watch are on concentric axes, the same divisions on the dial answering for both minutes and seconds. Find when first between 3 and 4 o'clock the second hand will equally divide the interval between the minute and hour hands.

Education Department, Ontario.

JULY EXAMINATIONS, 1882.

INTERMEDIATE.

NATURAL PHILOSOPHY.

TIME—TWO HOURS AND A HALF.

Values.	
10	1. A beam 14 feet long is supported at both ends; a weight of 1200 pounds is suspended 4 ft. from the centre. Find the pressure at each point of support. (Weight of beam to be neglected).
10	2. What power (in pounds) is required to draw a train of cars, weighing 158 tons, up a railway grade rising 10 inches in every 100 feet? (Friction to be neglected.)
10	3. Given the diameters of the two cylinders of a hydrostatic press and the force applied to the piston, determine the pressure produced.
10	4. A man exerting all his strength can just raise 230 pounds. What would be the weight of a stone (spec. gr 2.9) which he could just raise under water?
10	5. To what height will glycerine (spec. gr. 1.27) rise in a Toricellian tube when the barometer stands at 30.5 inches, specific gravity of mercury being 14?
(5+5) 10	6. Describe a simple experiment to illustrate (i.) The buoyancy of the air, and (ii). The variation of the buoyancy, with the barometric pressure of the air.
10	7. A power of 12 pounds on a wheel, the diameter of which is 8 feet, balances a weight of 280 pounds on the axle, what is the diameter of the axle, the thickness of the rope on the wheel being one inch, on the axle two inches? (The rope regarded as perfectly flexible, and the whole weight being supposed to act along its centre.)
5	8. Describe Nicholson's Hydrometer.

[OVER.

Values.

10 9. Distinguish between
(i.) Mass and weight;
(ii.) Density and specific gravity.

5 10. Define the term "equilibrium," and distinguish between stable and unstable equilibrium.

10 11. Demonstrate that two liquids will be in equilibrium in communicating vessels, when the altitudes of their columns are to each other inversely as their specific gravities.

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JULY EXAMINATIONS, 1882.

INTERMEDIATE.

LATIN.

TIME—THREE HOURS.

Values.

I. CICERO: *Pro Archia.*

Translate:

20 Est ridiculum ad ea, quæ habemus, nihil dicere, quærere quæ habere non possumus, et de hominum memoria tacere, literarum memoriam flagitare; et, quum habeas amplissimi viri religionem, integerrimi municipii jusjurandum fidemque, ea quæ depravari nullo modo possunt repudiare, tabulas quas idem dicis solere corrumpi desiderare. An domicilium Romæ non habuit is qui tot annis ante civitatem datam sedem omnium rerum ac fortunarum suarum Romæ collocavit? An non est professus? Immo vero iis tabulis professus, quæ solæ ex illa professione collegioque prætorum obtinent publicarum tabularum auctoritatem. Nam quum Appii tabulæ negligentius asservatæ dicerentur, Gabinii quamdiu incolumis fuit, levitas, post damnationem calamitas omnem tabularum fidem resignasset, Metellus, homo sanctissimus modestissimusque omnium, tanta diligentia fuit ut ad L. Lentulum et ad judices venerit et unius nominis litura se commotum esse dixerit.

8 1. Parse *corrumpi*, *professus*, *venerit*, *commotum esse*.

4 2. Mark the quantity of the penult in *quærere*, *tacere*, *solere*, *prætorem*, *obtinent*, *incolumis*, *perfidus*, *infidus*.

4 3. Explain the allusion in each of the following phrases: *ea quæ habemus*, *quæ habere non possumus*, *amplissimi viri*, *integerrimi municipii*.

2 4. *Jusjurandum*. Give gen. and abl. sing.

4 5. *Idem*. Mark the quantity of the penult. Distinguish between *īdem* and *ĭdem*, and give the gen. sing. and pl.

[OVER.

Values.	
1	6. *Dicis.* Who is here addressed?
4	7. *Romæ.* Give rules for expressing "at" and "to" a place with names of towns, with examples.
4	8. *Tot annis.* What case and why? Give rules for the expression of time in Latin, with examples.
4	9. *Ante civitatem datam.* Translate into Latin: The king, when Alexander had taken Tyre, went away. The king set out after the capture of the city.
4	10. *Prætorum.* Define the duties and number of these magistrates.
2	11. *Resignasset.* State the precise meaning of this word.
1	12. Distinguish between *vĕnit* and *vēnit.*
10	13. Give a brief outline of Cicero's life, giving the dates of his birth, consulship and death, and naming six of his principal orations, or sets of orations.

II. CÆSAR: *Bellum Britannicum.*

Translate:

15 Pugnatum est ab utrisque acriter: nostri tamen, quod neque ordines servare, neque firmiter insistere, neque signa *subsequi poterant*, atque alius alia ex navi, quibuscunque signis occurrerat, se aggregabat, magno opere perturbabantur. Hostes vero, notis omnibus vadis, ubi ex *littore* aliquos singulares ex navi egredientes conspexerant, incitatis equis *impeditos* adoriebantu ; plures paucos circumsistebant; alii ab latere aperto in universos tela conjiciebant. Quod cum animum advertisset Cæsar, scaphas longarum navium, item speculatoria navigia militibus compleri jussit, et, quos laborantes conspexerat, iis subsidia submittebat. Nostri, simul in arido constituerunt, suis omnibus, *consecutis*, in hostes impetum *fecerunt*, atque eos in fugam dederunt, neque longius *prosequi* potuerunt, quod equites cursum tenere atque insulam capere non potuerant. Hoc unum ad *pristinam* fortunam Cæsari defuit.

4	1. Mark the quantity of the penult in the italicised words.
20	2. Parse *subsequi, occurrerat, notis, egredientes, adoriebantur, circumsistebant, compleri, jussit, dederunt, defint.*
4	3. *Pugnatum est.* When must the impersonal form of the passive be used? Translate: "I am believed."
2	4. *Signis.* What case, and why?
2	5. *Impeditos.* Parse.

Values.

3 6. *Quod cum animum advertisset.* Give the usual form. Parse *quod* and *animum.*

4 7. *Jussit......submittebat.* Account for the difference in tense, and show from this example the correct use of these tenses respectively.

III. VIRGIL—*Æneid*, B. II.

Translate:

8 *(a)* Suspensi, Eurypylum scitantem oracula Phoebi
Mittimus, isque adytis haec tristia dicta reportat:
"Sanguine placastis ventos, et virgine caesa,
Quum primum Iliacas, Danai, venistis ad oras:
Sanguine quaerendi reditus, animaque litandum
Argolica."

7 1. Scan the whole extract, marking the quantity of each syllable. When is *-us* final long, when short?

10 2. Parse *suspensi, mittimus, caesa, quaerendi, litandum.*

2 3. *Scitantem.* Paraphrase so as to show the force of the participle.

2 4. *Oracula Phoebi.* What oracle is meant? Where was it situated?

4 5. *Virgine caesa.* Give the name of the virgin, and tell the two different stories of her fate current in Greek mythology.

15 *(b)* Omnis spes Danaûm et coepti fiducia belli
Palladis auxiliis semper stetit. Impius ex quo
Tydides sed enim, scelerumque inventor, Ulixes,
Fatale aggressi sacrato avellere templo
Palladium, caesis summae custodibus arcis,
Corripuere sacram effigiem, manibusque cruentis
Virgineas ausi divae contingere vittas;
Ex illo fluere ac retro sublapsa referri
Spes Danaûm, fractae vires, aversa deae mens.
Nec dubiis ea signa dedit Tritonia monstris.

8 1. Parse *Danaum, coepti, auxiliis, avellere, corripuere, contingere, sublapsa, fractae.*

3 2. Distinguish between *dĕdit* and *dēdit, ĕdo* and *ēdo, sōlum* and *sŏlum.*

8 3. Write notes on *Tydides, Ulixes, Palladium, Tritonia.*

2 4. *Ulixes.* Give both forms of the gen.

2 5. *Fluere.* Define the use of this infin., and explain its government.

4 6. *Mirabile dictu.* Define the use of the supines in Latin.

[OVER.

Values.

5 7. Sketch in outline the course of events as narrated in the first 300 lines of this book. Who is the narrator, and to whom is the story told?

8 8. Write in full the passage descriptive of Laocoon's death, from line 213 *(Laocoonta petunt, &c.)* to 224 *(cervice securim).*

IV. GRAMMAR.

9 1. Give the gen. sing. of *rupes, hospes, nepos, corpus, opus, cuspis, imago, praedo, cor.*

4 2. Decline *domus* throughout, in both numbers.

4 3. Give instances of double genders and double plurals, two of each.

7 4. Give the meaning of the following nouns in sing. and pl. respectively: *aedes, auxilium, copia, castrum, fines, littera, impedimentum.*

6 5. When is the conjunction "that" to be rendered in Latin by the acc. with the infin., and when by *ut* with sub.? When is "that no one" to be translated by *ut nemo*, when by *ne quis?*

4 6. Give the rule for the proper sequence of the tenses of the subj. in dependent sentences.

4 7. When must the English infin. be rendered by *ut* with subj.?

V. COMPOSITION.

(a) Translate into Latin:

1+2=3 1. He answered that he understood. 2. He was the first who undertook to finish the business.

2 3. He warned Cæsar not to believe the Gauls.

4 4. It cannot be denied that we ought to have obeyed the laws of our country.

3 5. There is no doubt that no man may be neutral (*medius*).

4 6. It is of great importance to me that Lentulus should be informed of my design.

(b) Translate the following sentences into Latin, rendering the dependent clauses by participial phrases:

3 1. We must spare our enemies, even though they should resist us.

2 2. I desire heaven, because its joys will last for ever.

4 3. Conon caused the walls, which had been pulled down by Lysander, to be repaired.

(*c*) Translate into Latin:

23 And since these things are so, Caius Manilius, in-the-first-place I praise both this law and intention (*voluntas*) and opinion of yours, and most emphatically (*vehementer*)

approve of it: and, next I exhort you, on the authority of the Roman people (abl. abs.), to persist in your opinion, and not to fear any one's violence or threats whatever. In-the-first-place I judge that there is in you sufficient courage and perseverance: in-the-next, when we see such a multitude present with such enthusiasm (*studium*), as we now see for-the-second-time in [the matter of] appointing (*præficere*) the same man, what [reason] is there, why we should hesitate, either concerning the matter [in hand], or the possibility (*facultas*) of bringing-it-about (*perficere*).

⁂ Note—Words in [ ] are to be omitted in translating; hyphens indicate that the words connected by them are to be translated by a single Latin word.

Education Department, Ontario.

JULY EXAMINATIONS, 1882.

INTERMEDIATE.

FRENCH.

TIME—THREE HOURS.

Values.

I.

GRAMMAR AND COMPOSITION.

12 — 1. State the principal rules for forming the feminine of adjectives, and give an example of each.

9 — 2. Give two sentences to illustrate the meaning of the pronoun on, and state when on takes l' before it.

9 — 3. Explain fully, with examples, how questions are asked in French.

22, *i.e.* 8+4+10 — 4. Write out the indicative mood of the verb y avoir, and the subjunctive mood of falloir. Give the principal parts of ouvrir, tenir, naître, croire, dire.

9 — 5. State the rules for the formation of adverbs in -ment from adjectives, with examples.

9 — 6. Give the meanings and plurals of chef-lieu, Hôtel-Dieu, chef-d'œuvre, cog-à-l'âne, contre-coup, passe-partout.

12 — 7 When are I, thou, he, they (m.) rendered into French by moi, toi, lui, eux?

12 — 8. State the principal rules for the use of the Subjunctive Mood.

9. Translate into French—

3 — (*a*) With whom do you live?

5 — (*b*) There are in France eighty-six capitals of departments.

4 — (*c*) What I fear, is to displease you.

5 — (*d*) Neither the one nor the other will obtain the prize.

5 — (*e*) Gently, sir; speak of him with more respect.

[OVER.

Values.

27 10. Translate into French:—Louis the Ninth appeared a prince destined to reform Europe, if Europe could have been reformed; to make France triumphant and well-governed, and to be in everything the model of men. His piety, which was that of an anchorite (anachorète), did not take away from him any kingly virtue. He knew how to harmonize (accorder) profound policy with strict justice, and perhaps he is the only sovereign who deserves this praise.

II.

Souvestre: *Un Philosophe sous les Toits.*

24 Translate:—(*a*). Qu'irai-je faire, moi, au milieu de ces hardis aventuriers de la finance! Pauvre moineau né sous les toits, je craindrais toujours l'ennemi qui se cache dans le coin obscur; prudent travailleur, je penserais au luxe de la voisine si subitement évanoui; observateur timide, je me rappellerais les fleurs lentement élevées par le vieux soldat, ou la boutique dévastée pour avoir changé de maîtres! Loin de moi les festins au-dessus desquels pendent des épées de Damocles. Je suis un rat des champs; je veux manger mes noix et mon lard assaisonnés par la sécurité.

4 1. craindrais—parse and give the principal parts of the verb.

2 2. Loin de moi, &c. Supply the verb.

4 3. Des épées de Damocles. Je suis un rat des champs. Explain the allusions.

Translate:

40 (*b*) Enivré par l'air libre, par la pénétrante senteur de la sève en travail, par les parfums des chèvre-feuilles, il marchait jusqu'à ce que la faim et la fatigue se fissent sentir. Alors il s'asseyait à la lisière d'un fourré ou d'un ruisseau: le cresson d'eau, les fraises des bois, les mûres des haies, lui faisaient tour à tour un festin rustique; il cueillait quelques plantes, lisait quelques pages de Florian alors dans sa première vogue, de Gessner qui venait d'être traduit, ou de Jean-Jacques dont il possédait trois volumes dépareillés. La journée se passait dans ces alternatives d'activité et de repos, de recherches et de rêveries, jusqu'à ce que le soleil, à son declin, l'avertit de reprendre la route de la grande ville où il arrivait, les pieds meurtris et poudreux, mais le cœur rafraîchi pour toute une semaine.

Values.

6 1. Lisait quelques pages. Distinguish from lisait des pages.

6 2. Venait d'être. Distinguish from venait à être.

2 3. Avertit. Parse.

6 4. Write short notes on Florian, Gessner, Jean-Jacques.

De Fivas' Reader.

43 Translate:

La cigale, ayant chanté
Tout l'été,
Se trouva fort dépourvue
Quand la bise fut venue:
Pas un seul petit morceau
De mouche ou de vermisseau:
Elle alla crier famine
Chez la fourmi sa voisine,
La priant de lui prêter
Quelque grain pour subsister
Jusqu'à la saison nouvelle.
Je vous paierai, lui dit-elle,
Avant l'août, foi d'animal,
Intérêt et principal.
La fourmi n'est pas prêteuse;
C'est là son moindre défaut.
Que faisiez-vous au temps chaud?
Dit-elle à cette emprunteuse.
— Nuit et jour à tout venant
Je chantais, ne vous déplaise.
— Vous chantiez! J'en suis fort aise.
Hé bien, dansez maintenant.

8 1. Parse dépourvue, venue, foi, deplaise.

6 2. Compare petit, chaud, moindre.

6 3. J'en suis fort aise. Explain "en" by a phrase in French equivalent in meaning.

Education Department, Ontario.

JULY EXAMINATIONS, 1882.

INTERMEDIATE.

GERMAN.

TIME—THREE HOURS.

Values.

60 1. Translate into English:

„Wohl dem, der frei von Schuld und Fehle
Bewahrt die kindlich reine Seele!
Ihm dürfen wir nicht rächend nahn,
Er wandelt frei des Lebens Bahn.
Doch wehe, wehe, wer verſtohlen
Des Mordes ſchwere That vollbracht!
Wir heften uns an ſeine Sohlen,
Das furchtbare Geſchlecht der Nacht"

„Und glaubt er fliehend zu entſpringen,
Geflügelt ſind wir da, die Schlingen
Ihm werfend um den flücht'gen Fuß,
Daß er zu Boden fallen muß.
So jagen wir ihn, ohn' Ermatten,
Verſöhnen kann uns keine Reu',
Ihn fort und fort bis zu den Schatten
Und geben ihn auch dort nicht frei."

So ſingend, tanzen ſie den Reigen,
Und Stille, wie des Todes Schweigen,
Liegt überm ganzen Hauſe ſchwer,
Als ob die Gottheit nahe wär.
Und feierlich, nach alter Sitte,
Umwandelnd des Theaters Rund,
Mit langſam abgemeſſnem Schritte,
Verſchwinden ſie im Hintergrund.

8 (i.) Analyze the first two lines.

4 (ii.) Parse frei, 1st and 4th line.

8 (iii.) Decline: Die kindlich reine Seele and Das furchtbare Geſchlecht.

4+4

8 (iv.) Give principal parts of the following verbs:—Dürfen, vollbringen, fliehen, entſpringen, werfen, fallen, liegen, verſchwinden.

4 (v.) Distinguish between da and dort, and between daß and das.

2+2

2 (vi.) Parse überm, 19th line.

[OVER.

Values.

20 Change into German Prose the following two stanzas:

Und zwiſchen Trug und Wahrheit ſchwebet
Noch zweifelnd jede Bruſt und bebet
Und huldiget der furchtbarn Macht,
Die richtend im Verborgnen wacht,
Die unerforſchlich, unergründet
Des Schickſals dunkeln Knäuel flicht,
Dem tiefen Herzen ſich verkündet,
Doch fliehet vor dem Sonnenlicht.

Da hört man auf den höchſten Stufen
Auf einmal eine Stimme rufen:
„Sieh da, ſieh da, Timotheus,
Die Kraniche des Ibykus!"
Und finſter plötzlich wird der Himmel,
Und über dem Theater hin
Sieht man in ſchwärtzlichtem Gewimmel
Ein Kranichheer vorüberziehn.

20 Translate into English:

Da war es mir fürwahr, als wär' ich in die Zeit entrückt, wo die Hausväter an der Straße ſaßen, und wenn ein Wanderer vorüberzog, oft wetteifernd mit einander ihn unter ihr Dach einluden und an ihrem Herde bewirtheten, ohne auch nur zu fragen, wo er herkäme, was er für Geſchäfte treibe und wie lange er zu weilen gedenke.

6 (i.) Distinguish between
2 + 2 + 2
Zu weilen and zuweilen,
Herd and Heerde,
gedenken and denken.

4 (ii.) Translate „Ich ſitze auf der Straße and Ich möchte gern an der Straße ſitzen.

4 + 4 (iii.) Give principal parts and etymology of
vorüberzog and einluden.

5 (iv.) Accentuate: entrückt, vorüberzog, wetteifernd einluden, bewirtheten.

25 Translate into English:

Ach, ich könnte glücklich ſein, ihr theuern Eltern, wenn ich euere Neujahrswünſche und Lehren erfüllt hätte!"

Im fieberhaften Erinnern an ſeine Jünglingszeit kam es ihm vor, als richte ſich die Larve mit ſeinen Zügen im Todtenhauſe auf—endlich wurde ſie durch den Aberglauben, der in der Neujahrsnacht Geiſter und Zukunft erblickt, zu einem lebendigen Jüngling.

10 (i.) (*a*) Explain the derivation of Neujahrswünſche, Jünglingszeit, Aberglauben and Todtenhaus.
6 + 4 (*b*) State the rule governing the gender of compound nouns.

7 (ii.) Könnte ſein / erfüllt hätte } What mood? What tense?

Values.

6 (iii.) Analyze the sentence: „Endlich wurde ſie. . . . . zu einem lebendigen Jüngling.

10 (iv.) Distinguish between Erinnern and Erinnerung, and and give reasons why the latter word could not be substituted for the former in the text.

6 (v.) Translate into German---It appears to me as if he were rising.

10 (vi.) Explain the force of lebendig before Jüngling. Why could not lebend be substituted for lebendig in the text, without destroying the author's intended meaning?

4 (vii.) Form the plural of the following nouns: Die Larve, Das Todtenhaus, Die Jünglingszeit and the singular of Geiſter.

Translate into German:

40 Three old men celebrated their jubilee together, and explained to their children why they had become so old. The one, a teacher and priest, said: The length of the way never troubled me when I went out to teach. I never stepped haughtily over the heads of youth, and I never raised my hands to bless, without that I actually blessed and praised God, for this reason I have become so old.

VOCABULARY.

Three: drei. The old man: der Greis. To celebrate: feiern. Their: ihr. The jubilee: das Jubelfeſt. Together: zuſammen. To explain: erzählen. The child: das Kind. Why: woher. To become old: alt werden. The teacher: der Lehrer. The priest: der Prieſter. To say: ſprechen. The length: die Länge. The way: der Weg. Never: nie. To trouble: kümmern When: wann. To go out: ausgehen. To teach: zu lehren. To step: hinweg—ſchreiten. Haughtily: anmaßend. Over: über The head: das Haupt. The youth: die Jugend. To raise: aufheben. The hand: die Hand. To bless: zu ſegnen. Without that: ohne daß. Actually: wirklich. To praise: loben. God: Gott. For this reason: darum.

TRANSLATE INTO GERMAN.

35 (i.) I would have been here.
(ii.) I have enjoyed my studies this winter.
(iii). At what hour shall I come to you?
(iv.) How long will you stay?
(v.) How are you this morning?
(vi.) I am very well, thank you.
(vii.) I pray, give me that book.

Education Department, Ontario.

JULY EXAMINATIONS, 1882.

INTERMEDIATE.

EUCLID.

TIME—TWO HOURS AND A HALF.

Values. *(Usual abbreviations permitted.)*

10 1. A parallelogram is a rectilineal figure whose opposite sides are parallel and whose opposite angles are equal.

Show clearly what is deficient and what redundant in this definition.

10 2. The three angles of a triangle are together equal to two right angles.
8 Prove this; and by its means show how to divide a right angle into three equal parts.

10 3. Triangles upon the same base and between the same
parallels are equal to one another. Prove this; and thence
8 show how to change an irregular four-sided figure into an
equal triangle.

8 4. Given three straight lines, show how to construct a
6 triangle having these lines for sides. Can it always be
done? Explain fully.

16 5. If a straight line be bisected and also cut into two unequal parts, give the relations existing amongst the segments as expressed in two propositions of the Second Book of Euclid, and prove one of these propositions.

6. Do *one only* of the following:—

12 (*a*) If A, B, C be the angular points of a triangle, find an expression for the perpendicular from A upon the side BC, in terms of the sides.

12 (*b*) If from any point in the circumference of a circle two lines are drawn to the extremeties of a diameter, the sum of the squares upon these lines is constant; and the angle contained by these lines is a right angle. [No reference to Euc. Bk. III.]

12 7. What proposition of the Second Book would be formed from Euc. II. 12, by bringing the vertex A down to the point D in the side BC produced?

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JULY EXAMINATIONS, 1882.

INTERMEDIATE.

COMPOSITION.

TIME—ONE HOUR AND A HALF.

I.

Write out the sense of the following passage in good prose :

EPITAPH ON A JACOBITE.

To my true king I offered free from stain
Courage and faith ; vain faith, and courage vain.
For him, I threw lands, honours, wealth, away,
And one dear hope, that was more prized than they.
For him I languished in a foreign clime,
Gray-haired with sorrow in my manhood's prime ;
Heard on Lavernia Scargill's whispering trees,
And pined by Arno for my lovelier Tees ;
Beheld each night my home in fevered sleep,
Each morning started from the dream to weep ;
Till God, who saw me tried too sorely, gave
The resting place I asked, an early grave.
Oh thou, whom chance leads to this nameless stone,
From that proud country which was once my own,
By those white cliffs I never more must see,
By that dear language which I spake like thee,
Forget all feuds, and shed one English tear
O'er English dust. A broken heart lies here.

—*Macaulay.*

II.

(a) Sketch the line of argument in the "Deserted Village", or

(b) Write a short essay on one of the following subjects :

(i.) The relative advantage of life in the country and in large cities.

(ii.) How far do intellectual and moral excellence go hand-in-hand ? Illustrate by historical examples.

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JULY EXAMINATIONS, 1882.

INTERMEDIATE.

CHEMISTRY.

TIME—ONE HOUR AND A HALF.

Values.	
12	1. A specimen of water was divided into two parts. One part was then boiled for some time. To this and the unboiled portion, contained in separate bottles, a small quantity of finely powdered chalk was added. Upon agitation it was found that the boiled portion had become milky, the unboiled portion remained clear, the chalk having dissolved. Explain the cause of this difference.
10	2. How much sulphur dioxide, by weight, can be obtained by burning 25 grains of sulphur in sufficient oxygen?
5 × 2 10	3. Which of the following gases should be collected by *upward* and which by *downward* displacement: Chlorine, Carbon Dioxide, Hydrogen, Sulphur Dioxide, Ammonia?
10	4. A quantity of alcohol, contained in an evaporating dish, was ignited and the burning liquid poured through wire gauze held over a beaker. The flame was by this process confined to the upper surface of the wire gauze, and the greater part of the alcohol collected unignited in the beaker. State the principle upon which the success of this experiment depends.
12	5. Assign reasons for assuming that the atmosphere is not a chemical compound but a mechanical mixture of oxygen and nitrogen.
8	6. Describe the physical changes which sulphur undergoes in being heated to 440°C.
15 5 + 10	7. Write out the equation representing the reaction taking place in the preparation of nitrogen dioxide, and represent by diagram the necessary apparatus for its elimination and collection.

[OVER.

Values.	
8	8. A piece of paper saturated with spirits of turpentine when plunged into a jar containing dry chlorine ignites. Explain.
5 + 10 15	9. (i.) Write out the equation representing the reaction in preparing carbon dioxide from calcium carbonate and hydrochloric acid. (ii). How much, by weight, of calcium carbonate is required to furnish 12 litres of carbon dioxide, measured at 0°C. and 760 $^{mm.}$ P. ?

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JULY EXAMINATIONS, 1882.

INTERMEDIATE.

BOOK-KEEPING.

TIME—ONE HOUR AND A QUARTER.

Values.

14 1. Explain the terms Folio, Cash, Trial Balance, Posting, Bills Receivable, Sundries, Consignment.

15 2. Write out the general forms of a Promissory Note, a Draft, and a Bill of Exchange.

18 3. Define the terms, Profit and Loss, Stock, Excise, Bill of Entry, Drawback, Dividend.

4 4. What is the general rule of Debiting and Crediting?

24 5. Journalize the following:—

(*a*) I receive a legacy of $1000.

(*b*) Borrowed $500, for which I give my note due three months hence.

(*c*) Took a promissory note in payment of a debt of $100; discounted same; net proceeds $97.

(*d*) Sold Mdse. amounting to $1000, for which I received $500 Cash, Cheque on Bank of Montreal for $200, Note at 60 days for balance.

(*e*) Commenced business with a capital of $2000 cash, $2000 in Bills Receivable, $2000 borrowed from A. B.

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JULY EXAMINATION, 1883.

FIRST CLASS PROFESSIONAL EXAMINATION.

HISTORY OF EDUCATION.

TIME—ONE HOUR AND A HALF.

1. Give the characteristic features of the Classicists' System of Education as to—(*a*) Subject Matter, (*b*) Methods of Teaching.

2. By what arguments does Locke strive to prove that private tuition is more conducive to the formation of *character* in boys, than is school tuition? How are his arguments refuted?

3. Write an account of Basedow's Philanthropin.

4. "We are learned not so far as we have learned, but only so far as we have remembered." Whose theory is this, and in what respects is it fallacious?

5. Give an epitome of Herbert Spencer's educational theories.

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JULY EXAMINATIONS, 1883.

FIRST CLASS PROFESSIONAL EXAMINATION.

EDUCATION.

TIME—TWO HOURS.

1. Give some account of Sensation, Perception and Conception.

2. The Law of Association of Ideas includes—
   (1) Similarity and Contrast.
   (2) Contiguity.
   (3) Logical Connection.
   (4) Cause and Effect.

Briefly explain these elements, giving familiar illustrations in each case.

3. Spencer says:—
"The rote system made more of the forms and symbols than of the things signified. . . . in proportion as there was attention to the signs there was inattention to the things signified."
Comment on this, giving illustrations of the points you advance.

4. "From the known to the unknown." In this law the following, amongst other elements, are included:—
   (1) From the concrete to the abstract.
   (2) From the simple to the complex.
   (3) From facts to principles.

Give familiar examples of the application of these principles.

5. "The power of expression is as important as the power of thought."
Remark briefly on this, and outline what you conceive to be the best course to follow in training the language-faculty.

6. Give a summary of the use of Object Lessons in education, and note some cautions to be observed to prevent their abuse.

7. Write a note on the importance of moral education. Shew how far the daily work, discipline, &c., of the school may subserve the purpose of moral culture.

NOTE—*Seventy-five per cent. will be considered a full paper.*

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JULY EXAMINATIONS, 1883.

FIRST CLASS PROFESSIONAL EXAMINATION.

MUSIC.

1. Write the scales of D major and F major in notes.

2. Write the syllables used in singing the scale.

3. Write an example of a time signature and of a key signature, and explain use.

4. What is the difference between the chromatic and diatonic scales.

5. Write examples of whole, half, quarter, eighth, and sixteenth notes; also equivalent rests.

6. Give a synopsis of first lesson to a class of very young children.

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JULY EXAMINATIONS, 1883.

FIRST CLASS PROFESSIONAL EXAMINATION.

DRAWING.

TIME—ONE HOUR AND A HALF.

1. Draw an oblong table (square legs), 3 feet below horizontal line; distance optional, dotted construction lines only; may be ruled.

2. Draw a patent pail below hor. line, showing method of drawing staves and hoops.

3. Draw an eight-pointed star, 3 inches.

4. Draw a square rosette, any pattern, 3 inches.

5. Draw a square (3 in.) with interlacing curved pattern.

6. Draw two equilateral triangles, interwoven, 3 in.

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JULY EXAMINATIONS, 1883.

FIRST CLASS TEACHERS—GRADES A AND B.

DYNAMICS.

TIME—TWO HOURS AND A HALF.

(Five questions to constitute a full paper. Candidates are not to send up answers to more than five questions.)

1. Explain how velocity and rate of change of velocity at any given moment are determined, and how they are expressed.

Show that the numerical measure of a given acceleration varies directly as the square of the unit of time and inversely as the unit of length.

A velocity of 11 feet per second is changed uniformly in 5 minutes to a velocity of 10 miles per hour. Determine the numerical measure of the rate of change, taking the chain and the minute as the units of length and of time respectively.

2. Deduce the parallelogram of forces from the parallelogram of velocities and Newton's laws of motion.

A heavy body Q is drawn up a smooth inclined plane AC by another body P, which slides down the smooth inclined plane CB, P being connected with Q by a perfectly flexible inextensible string passing over a smooth pulley at C. Find the acceleration of Q and the tension of the string.

3. A heavy particle is projected in vacuo with a given velocity. Determine its position and the magnitude and direction of its velocity after a given time.

A shot of 2,000 lbs. is fired from a gun weighing 224,000 lbs. placed on a smooth horizontal plane and elevated at an angle of 30°. Find the horizontal range of the shot (neglecting the resistance of the air), if its muzzle-velocity relative to the gun be 1,500 ft. per second.

4. Show how to determine the acceleration of the centre of inertia of a number of heavy particles of given weights and all moving in the same plane, the acceleration of each particle being given.

Find the acceleration of the centre of inertia of P and Q in the rider to question 2 above, and show that the path described by the centre of inertia is a straight line.

5. A particle of mass m, attached to a point in a smooth horizontal plane by a string of length r makes n revolutions per second, find the tension of the string.

[OVER.

With what velocity would a shot need to be fired—1st eastward, 2nd westward, at the equator, that, if unresisted, it might move horizontally round the earth?

6. Explain how the value of g may be determined by means of the pendulum.

In a Kater's pendulum the length between the knife edges was 4 ft., and the pendulum was observed to make 28 vibrations in 31 seconds, determine the value of g.

7. What experimental principle is assumed in treating of the impact of elastic balls. Two imperfectly elastic balls moving in the same straight line, impinge, find their velocities after impact.

A ball whose co-efficient of restitution is .75, is projected with a velocity of 6 ft. per second, from a point on a plane inclined at an angle of 30° to the horizon. If the ball be projected at right angles to the plane, show that before ceasing to rebound it will describe a distance of 24 ft. along the plane. $(g=32.)$

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JULY EXAMINATIONS, 1883.

FIRST CLASS TEACHERS—GRADES A AND B.

CHAUCER.

TIME—TWO HOURS AND A HALF.

1. "Chaucer may fairly be said to be not only the earliest dramatic genius of modern Europe, but to have been a dramatist before that which is technically known as the existing drama was invented." Explain this statement fully.

2. Describe the condition of the English Language at the time when Chaucer began to write, and show clearly what influence his writings had upon its subsequent history.

3. Point out the chief peculiarities (1) in the grammatical forms, (2) in the versification, of Chaucer.

4. "A gentil Maunciple was ther of a temple,
Of which achatours mighten take exemple
For to be wys in beyying of vitaille.
For whethur that he payde, or took by taille,
Algate he waytede so in his acate,
That he was ay biforn and in good state.
Now is not that of God a ful fair grace,
That such a lewed mannes wit schal pace
The wisdom of an heep of lernede men?"

(*a*) Derive and explain the meaning of—Maunciple, temple, achatours, payde, taille, grace, lewed.

(*b*) Explain—(1) "took by taille"; (2) "wayted so in his acate"; (3) "ay biforn and in good state"; (4) "schal pace the wisdom".

(*c*) Rewrite in modern prose.

5. Give the substance of Chaucer's description of the Clerk and the Frankeleyn.

6. Explain the meaning of—

(1) For he was Epicurius owne sone.
(2) Was nowher such a worthi vavaser.
(3) Swevens engendrid ben of replecciouns.
(4) Han hent the carter, and so sore him pyned.
(5) He knew by kynde, and by noon other lore
That it was prime, and crew with blisful steven.
(6) Certes he Jakke Straw, and his meyne,
Ne maden schoutes never half so schrille,
Whan that thay wolden eny Flemyng kille.

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JULY EXAMINATION, 1883.

FIRST CLASS TEACHERS—GRADES A AND B.

ALGEBRA.

TIME—TWO HOURS AND A HALF.

(Seventy-five per cent. of this paper will be considered a maximum.)

1. Solve the equations

$$ax+yz=ay+zx=az+xy=b^2.$$

2. If x, y, z are all unequal show that one of the three following equations may be derived from the other two:—

$$a^2(x^2+xy+y^2)-axy(x+y)+x^2y^2=0.$$
$$a^2(y^2+yz+z^2)-ayx(y+z)+y^2z^2=0.$$
$$a^2(z^2+zx+x^2)-azx(z+x)+z^2x^2=0.$$

Also prove that

$$\frac{1}{x}+\frac{1}{y}+\frac{1}{z}=\frac{1}{a}.$$

3. Write down the general term of the expansion of $(1+x)^{-\frac{m}{n}}$ in powers of x.

If x be a very small fraction, prove that

$$\sqrt{(1+4x)}=1+x+\frac{x}{1+2x} \text{ very nearly.}$$

4 Expand a^x in powers of x.

If $$f(x)=i\frac{a^{-xi}-a^{xi}}{a^{-xi}+a^{xi}} \text{ in which } i^2=-1,$$

prove that $$f(x+y)=\frac{f(x)+f(y)}{1-f(x).f(y)}.$$

5. Define $\log_a x$, and prove that $\log_y x \times \log_z y=\log_z x$. Write down the series for $\log_e(1+x)$, and prove that

$$\log_{10}11=1+M\left(\frac{1}{21}+\frac{1}{21^3.3}+\frac{1}{21^5.5}+\&c\right),$$

where $M=\log_{10}e$.

6. State the principle of indeterminate coëfficients, and give the usual proof of it.

If $a<1$ prove that

$$(1+ax)(1+a^3x)(1+a^5x)\ldots\ldots=$$
$$1+\frac{ax}{1-a^2}+\frac{a^4x^2}{(1-a^2)(1-a^4)}+\frac{a^9x^3}{(1-a^2)(1-a^4)(1-a^6)}+\&c.$$

[OVER

7. Prove that $\dfrac{1.2.3\ldots\ldots m.x^{m-1}}{(x+1)(x+2)\ldots\ldots(x+m)} =$

$$\frac{m^m}{x+m} - \frac{m}{1}\frac{(m-1)^m}{x+m-1} + \frac{m(m-1)}{1.2}\cdot\frac{(m-2)^m}{x+m-2} - \&c.$$

8. If a, b, x and y are all positive quantities, prove that

$$\frac{x(x-y)}{ay+bx} \text{ is never less than } \frac{x-y}{a+b},$$

and that $\dfrac{xy}{ay+bx}$ is never greater than $\dfrac{ax+by}{(a+b)^2}$.

9. If $[n]^r$ denote the sum of the r^{th} powers of all the positive integers up to n inclusive, prove that

$$[n-1]^r = [n]^r - \frac{r}{1}[n]^{r-1} + \frac{r(r-1)}{1.2}[n]^{r-2} - \frac{r(r-1)(r-2)}{1.2.3}[n]^{r-3} + \&c.$$

10. Find two quantities such that each is the square of the other, and if x be one of them find the value of

$$(a+bx+cx^2)(a+bx^2+cx^4)(a+bx^3+cx^6).$$

If $a+b+c+d=0$, prove that

$$a^3+b^3+c^3d^3 = 3(bcd+cda+dab+abc).$$

11. Find the condition that the product of two of the roots of a biquadratic equation may be equal to the product of the other two, and show how to solve such an equation.

Solve the equation

$$x^4+7x^3+22x^2+35x+25=0.$$

12. The sides of a triangle are the roots of the equation

$$x^3-6x^2+11x-3=0,$$

find its area.

13. Show how to express the product of two determinants in the form of a determinant.

Prove that

$$\begin{vmatrix} a^2+x^2, & ab+cx, & ac-bx \\ ab-cx, & b^2+x^2, & bc+ax \\ ac+bx, & bc-ax, & c^2+x^2 \end{vmatrix}$$

$$= \begin{vmatrix} x, & c, & -b \\ -c, & x, & a \\ b, & -a, & x \end{vmatrix}^2$$

$$= x^2(x^2+a^2+b^2+c^2)^2.$$

Education Department, Ontario

JULY EXAMINATIONS, 1883

FIRST CLASS TEACHERS—GRADES A AND B.

GEOMETRICAL OPTICS.

TIME—TWO HOURS.

1. State the laws of Reflexion and Refraction of light.

2. What is meant by the *focal length* of a concave mirror?—of a convex mirror?

If f denote the focal length of a mirror and D, d, the respective distances of the object and image from the mirror, prove the relation,

$$\frac{1}{d} + \frac{1}{D} = \frac{1}{f}.$$

3. A concave mirror must have one focus real, and may have both real: a convex mirror must have one focus virtual and may have both virtual.

Prove these statements.

4. A ray of light passes obliquely through a plate of glass having parallel surfaces and whose thickness is t. If φ be the angle of incidence, u the index of refraction, and D the displacement of the doubly refracted ray,

$$D = t \sin \varphi \left(1 - \frac{\cos \varphi}{\sqrt{u^2 - \sin^2 \varphi}}\right).$$

5. Defining *magnification* as the ratio of the angle subtended by the image to that subtended by the object to an eye placed at a given point; if E be the distance of the eye from a lens, and D, d the distances of the object and image respectively from the same lens, show that

$$M = \frac{d}{D} \cdot \frac{E + D}{E + d}.$$

6. A certain lens held at a distance of three feet from the eye causes the moon to appear four times its natural size. Determine the lens employed.

7. Describe the camera lucida and give the proper angles for the prism.

8. A smooth round tumbler of water is placed upon a sheet of paper in the sunshine.

Give a sketch of the luminous curve produced. Explain it, and through it explain the rainbow.

Education Department, Ontario.

JULY EXAMINATION, 1883.

FIRST CLASS TEACHERS—GRADES A AND B.

ENGLISH AND CANADIAN HISTORY.

TIME—TWO HOURS AND A HALF.

1. Give an account of the maratime enterprises and the extension of commerce during the reign of Elizabeth.

2. Sketch, after Macaulay, a history of the Convention of 1688.

3. "The original constitution of England was highly aristocratical." —*Hallam.*
Fully explain and illustrate this statement. Trace the steps by which the House of Commons came to be the most important branch of the legislature.

4. Contrast the positions of the French and the English colonies in America, shewing clearly the causes of the ultimate failure of the former, and of the success of the latter.

5. Write a paper on the morals and manners of the early French colonists.

Education Department, Ontario.

JULY EXAMINATIONS, 1883

FIRST CLASS TEACHERS—GRADES A AND B.

ANCIENT HISTORY AND GEOGRAPHY.

TIME—TWO HOURS AND A HALF.

1. Sketch briefly the origin and progress of the Athenian power from the invasion of Xerxes to the Peloponnesian War; and show how the history of Athens in that period illustrates the advantages and disadvantages of a democratic form of government.

2. Draw a map of the Peloponnesus, with the Isthmus of Corinth and Attica, marking the positions and names of the principal cities, rivers, and islands.

3. Trace, by a map, the progress of Hannibal from Saguntum to Capua, specifying the rivers and mountain-chains crossed by him in his march, and marking the sites of his most important battles.

4. Give a brief summary of the various revolutions from Ti. Gracchus to Sulla, specifying the objects aimed at in each case, and give an outline of the Roman Constitution as re-organized by Sulla.

5. Give Mommsen's estimate of the character of Cæsar and Cicero respectively, and of the political parties to which they belonged, and discuss the justice of that estimate.

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JULY EXAMINATIONS, 1883.

FIRST CLASS TEACHERS—GRADES A AND B.

ENGLISH LANGUAGE AND HISTORY OF ENGLISH LITERATURE.

TIME—TWO HOURS AND A HALF.

(*Four questions, of which 5 and 6 must be two, will be accounted a full paper.*)

1. "All the outgrowth and exuberance of the English language clusters round a Low Dutch centre." Explain.

2. "While the eventual, though distant, result of the Norman Conquest was thus a large reconstruction of the English vocabulary, the grammar of the language was not directly affected by it. But indirectly the grammar was affected very quickly." Explain.

3. "Also Englysche men hadde from the bygynnynge thre maner speche, Southeron, Northeron, and Myddel speche."
Briefly trace from Saxon times the pedigree of Modern English.

4. "These characteristics, which are so apparent to every reader of the 16th century literature, make it useful to separate *Early Modern* or *Tudor* English from the subsequent and still existing stage."
What are the characteristics of *Tudor* English?

5. Write short notes on the grammatical peculiarities in the following:—

"Jhesu, for them y the biseche
That wraththen thee in ony wise
With-holde from hem thin hond of wreche
And lete hem lyue in thi seruice.

"Jhesu, moost coumfort for to se
Of thi seintis euerychoone,
Coumfort hem that careful been,
And helpe hem that ben woo bigoon."

6. Write short notes on the "Mirror for Magistrates", "The Færie Queene", the "Barons' Wars", "Hudibras", "Absalom and Achitophel", "The Scholemaster", the "Advancement of Learning", and the "Areopagitica".

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JULY EXAMINATIONS, 1883.

FIRST CLASS TEACHERS—GRADES A AND B.

ANTONY AND CLEOPATRA.

TIME—TWO HOURS AND A HALF.

1. Prof. Dowden and others separate, by several years, this play from Julius Cæsar, and join it to Macbeth and Coriolanus. Give reasons for this. Shew by what internal evidences the place of a play is fixed when its precise date cannot otherwise be determined.

2. "What is most astonishing in the character of Cleopatra is its antithetical construction—its *consistent inconsistency*, if I may use such an expression—which renders it quite impossible to reduce it to any elementary principles."—*Mrs. Jameson*.

Briefly comment on this criticism, shewing what you deem the prominent features of Cleopatra's character. Illustrate by quotations.

3. Her gentlewomen, like the *Nereides*,
So many mermaids, *tended her i' the eyes*,
And made their *bends adornings*; at the helm
A seeming mermaid steers; the silken tackle
Swell with the touches of those *flower-soft* hands,
That *yarely frame the office*. From the barge
A strange invisible perfume hits the sense
Of the adjacent *wharfs*. The city cast
Her people out upon her, and Antony,
Enthron'd i' the market-place, did sit alone,
Whistling to the air; which, *but for vacancy*,
Had gone to gaze on Cleopatra too
And made a gap in nature.

(*a*) Point out the rhetorical figures.

(*b*) Write explanatory notes on the italicized portions.

(*c*) Scan lines 9, 10, 11.

4. For what purposes does Shakespeare use (1) rhyme, (2) prose? In illustration refer to passages in the play.

5. And soberly did mount an $\left\{\begin{array}{l}\text{arrogant}\\ \text{arm-girt}\\ \text{arm-gaunt}\\ \text{termagant}\end{array}\right\}$ steed
Who neighed so high that what I would have spoke
Was $\left\{\begin{array}{l}\text{beastly}\\ \text{boastfully}\end{array}\right\}$ dumb'd by him.

Discuss the merits of the different readings.

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6. Our ills told us
(*a*) *Is* as the *earing*.
(*b*) This husband, *which*, you say, must charge his horns with garlands.
(*c*) 'T were pregnant they should *square* between themselves.
(*d*) She's a most triumphant lady if report be *square* to her.
(*e*) No practice had
In the brave *squares* of war.

Explain clearly the italicized words.

7. (*a*) Something it is I would,—
O, my oblivion is a very Antony,
And I am all forgotten.

Expand the metaphor, to shew its meaning; give a note on *forgotten*.

(*b*) But being charg'd, we will be still by land,
Which, as I take 't, we shall.

Paraphrase.

(*c*) She replied,
It should be better he became her guest.

Explain the difference between the Elizabethan and the modern *should*.

8. What are the characteristics of Shakespeare's plays which place them high above those of other dramatists?

Education Department, Ontario.

JULY EXAMINATIONS, 1883.

FIRST CLASS TEACHERS—GRADES A AND B.

TRIGONOMETRY.

TIME—TWO HOURS AND A HALF.

1. Tabulate the changes of the tangent and secant of an angle in sign and magnitude as the angle changes from 0° to 360°.

Obtain general expressions for all angles which have the same tangent and secant as A.

2. Define the logarithm of a number to a given base.

Prove
$$\log N^x = x \log N$$
$$\log_a N = \log_a b \log_b N$$
$$\log_{\tan\theta} \cot\theta = -1.$$

3. Find θ in the equations

$\sin\theta - \cos\theta = 0$; $\sin^2\theta - 2\cos\theta + \frac{1}{4} = 0$; $\cos 3\theta + \sin 3\theta = \frac{1}{\sqrt{2}}$.

Find conditions that $\sin^2\theta + b\sin\theta + c = 0$ may have possible roots.

4 Prove the formulae
$$\sin(A+B) = \sin A \cos B + \cos A \sin B.$$
$$\sin 18^\circ = \frac{\sqrt{5}-1}{4}.$$
$$\cos 3A = 4\cos^3 A - 3\cos A.$$
$$\frac{\tan\frac{a}{2} + \cot\frac{a}{2} + 2}{\tan\frac{a}{2} + \cot\frac{a}{2} - 2} = \frac{\sin^2\left(45^\circ + \frac{a}{2}\right)}{\sin^2\left(45^\circ - \frac{a}{2}\right)}.$$

5. Explain what is meant by the circular measure of an angle. If θ be the circular measure of a positive angle less than a right angle, θ is greater than $\sin\theta$ but less than $\tan\theta$.

Find the value of $\frac{\sin a\theta}{\sin b\theta}$ when θ is indefinitely diminished.

6. From a figure shew that $\tan(A+B) = \frac{\tan A + \tan B}{1 - \tan A \tan B}$, and deduce
$$\sin(A+B) = \sin A \cos B + \ldots$$
$$\cos(A+B) = \cos A \cos B - \ldots$$

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7. Explain the notation used for inverse trigonometrical functions, and prove

$$\tan^{-1}\alpha + \tan^{-1}\beta = \tan^{-1}\frac{\alpha + \beta}{1 - \alpha\beta}.$$

Find the value of $\cos 4(\tan^{-1}\alpha)$ in terms of α.

8. Investigate an expression for the area of a triangle in terms of the sides.

The sides a, b, c, of a triangle are in arithmetical progression; shew that its area is $\sqrt{1 - \frac{4(a-b)^2}{b^2}}$ times that of an equilateral triangle of the same perimeter.

9. Obtain an expression for the radius of the circle inscribed in a given triangle.

Shew that the distance between the centre of this circle and that escribed on the side a is $\dfrac{a}{\cos\frac{A}{2}}$.

10. The angular altitude and breadth of a cylindrical tower are observed to be α and β respectively; but at a point a feet nearer to the tower they are observed to be α' and β'. Find the height and circumference of the tower.

Education Department, Ontario.

JULY EXAMINATIONS, 1883.

FIRST CLASS TEACHERS—GRADES A AND B.

ADDISON, WORDSWORTH, MACAULAY.

TIME—TWO HOURS AND A HALF.

1. "The Spectator represents also, perhaps best represents, a wholesome Revolution in our Literature." Explain clearly what is here meant, tracing the causes of the Revolution and giving an account of the origin of the Spectator.

2. Reproduce the contents of two Spectators, one of them being an Allegory.

3. Give an account of The Campaign, describing the circumstances of its origin, and explain the causes of Addison's success in public life.

4. Give an account of the relations of Addison with (1) Pope, and (2) Swift.

5. "Once did she hold the gorgeous East in fee,
And was the safeguard of the West: the worth
Of Venice did not fall below her birth,
Venice, the eldest child of Liberty.
She was a maiden city, bright and free,
No guile seduced, no force could violate,
And when she took unto herself a mate,
She must espouse the everlasting sea.
And what if she had seen those glories fade,
Those titles vanish, and that strength decay;
Yet shall some tribute of regret be paid
When her long life hath reached its final day.
Men are we, and must grieve when even the shade
Of that which once was great is passed away."

(*a*) Illustrate from this sonnet the peculiar excellencies of the Wordsworthian sonnet.

(*b*) Write explanatory notes on lines 1, 2, 4, 7 and 8, 12.

6. In what does Wordsworth's greatness as a poet consist? Illustrate by quotations from, or references to, the sonnets.

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JULY EXAMINATIONS, 1883.

FIRST CLASS TEACHERS—GRADES A AND B.

ANALYTICAL GEOMETRY.

TIME—TWO HOURS AND A HALF.

1. Find the angle between the lines $ax + by + c = 0$ and $a'x + b'y + c' = 0$; and deduce the condition that they may be (1) parallel, (2) perpendicular.

Utilize the result to find the locus of the intersection of two lines which pass through two fixed points and make a constant angle with each other.

2. Determine the distance from the points (h, k) to the line $ax + by + c = 0$, in the direction indicated by the direction cosines l, m.

3. Interpret, geometrically, the equations—

$x^2 = 0$; $x^2 + xy + y^2 = 0$; $xy = 0$; $\rho = 0$; $\sin\theta \cos\theta = 0$.

From geometrical considerations obtain the conditions that the values of x in terms of y, and of y in terms of x, in the equation $ax^2 + by^2 + 2cxy + 2dx + 2ey + f = 0$, shall be equal with opposite signs.

4. Find the co-ordinates of the centre, and the radius of the circle $x^2 + y^2 + 2ax + 2by + c = 0$.

Obtain the conditions that the circles $x^2 + y^2 + 2ax + 2by + c = 0$ and $x^2 + y^2 + 2a'x + 2b'y + c' = 0$, may (1) touch ($\alpha$) externally ($\beta$) internally; (2) be concentric.

5. Determine the equation to the tangent to the circle $x^2 + y^2 = r^2$ at the point (x', y').

Also in the case of the same circle, the tangent which passes through the point (h, k) without the circle; and the tangent which makes a given angle (θ) with the axis of x.

6. Find the equation to the polar of any point (x', y') with respect to the ellipse $\dfrac{x^2}{a^2} + \dfrac{y^2}{b^2} = 1$.

If the pole move along the line $Ax + By + C = 0$, its polar will turn about the point $\left(-\dfrac{Aa^2}{C}, -\dfrac{Bb^2}{C}\right)$.

7. Give a mechanical method for describing an ellipse; proving the property on which the method depends.

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8. Shew that diameters parallel to any pair of supplemental chords are conjugate.

If on a diameter of an ellipse a segment of a circle be described containing a given angle, the lines drawn from the point where the segment cuts the ellipse to the ends of the diameter are constant in direction whatever be the diameter taken, the angle being constant.

9. In the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$, find the co-ordinates of the extremity of the diameter conjugate to that whose extremity is $(x'y')$.

Obtain the conditions that the lines $Ax + By + C = 0$, $A'x + B'y + C' = 0$ may be tangents to this ellipse at the ends of conjugate diameters.

10. Given the equation to a parabola in the form $\frac{\frac{1}{4}l}{\rho}=\cos^2\frac{\theta}{2}$, obtain the equation to the tangent in the form

$$\frac{\frac{1}{4}l}{\rho}=\cos\frac{\alpha}{2}\cos\left(\theta-\frac{\alpha}{2}\right).$$

Education Department, Ontario.

JULY EXAMINATION, 1883.

FIRST CLASS TEACHERS—GRADE C.

CHEMISTRY.

TIME—TWO HOURS.

1. Explain the full meaning of the following, merely as chemical symbols:—O, OH_2, $3Na_2CO_3$.

2. The chemical constitution of a gas being known, how can you calculate its specific weight?

Apply your method to find the sp. wt. of the gases whose compositions are—CO_2, NH_3, $C_4H_{10}O$

Can you mention any gases which form an apparent exception to the general rule?

3. The ultimate analysis of a substance composed of carbon, hydrogen, and oxygen, gives, in one hundred parts—carbon, 40; hydrogen, 6.6; oxygen, 53.4, by weight, and the specific weight of its vapor is 30. Determine the formula of the substance.

4. Describe the usual methods of obtaining the following substances, and in all cases illustrate by symbols any chemical changes taking place:—(*a*) Hydrogen, (*b*) nitrogen monoxide, (*c*) chlorine, (*d*) sulphur dioxide, (*e*) sodic carbonate, (*f*) "quick" lime, (*g*) magnesic sulphate, (*h*) ferric chloride.

5. Describe and explain any phenomena observable, when—

(*a*) Copper is put into strong nitric acid;

(*b*) Water is mixed with strong commercial sulphuric acid;

(*c*) The breath is passed for some time through lime-water, and then carbon dioxide is passed through it in excess.

(*d*) A few drops of sulphuric acid is added to a solution of sodic thiosulphate.

(*e*) Ferrous sulphate is strongly heated in the air.

(*f*) A drop of a solution of potassic permanganate is added to water containing organic matter.

6. What is the chemical difference in the bleaching effected by chlorine and that by sulphur dioxide?

Dry chlorine will not bleach. Why?

7. Name the essential constituents of the atmosphere, and give, as far as you can, their particular uses in the economy of nature.

Education Department, Ontario.

JULY EXAMINATION, 1883.

FIRST CLASS TEACHERS—GRADE C.

ELEMENTARY MECHANICS.

TIME—TWO HOURS AND A HALF

(Five questions to constitute a full paper. Candidates are not to send up answers to more than five questions)

1. Define the terms velocity, acceleration. Explain how a variable velocity is measured, and how that measure is expressed.

The velocity of a body falling freely receives each second an acceleration of 32 feet per second; express this acceleration, taking the mile as unit of length and the hour as unit of time.

2. If a particle move with uniformly accelerated motion, show that its average velocity during any given time will be equal to one-half of the sum of its velocity at the beginning and its velocity at the end of the given time Hence show that, for a uniform acceleration equal to a,

$$s = ut + \tfrac{1}{2}at^2.$$

A body is projected vertically, 1st upwards, 2nd downwards with an initial velocity of 60 ft. per sec. After how long an interval of time will it in each case be at a point 100 ft. below the point of projection?

3. Enunciate—1st, the parallelogram of displacements; 2nd, the parallelogram of velocities; 3rd, the parallelogram of accelerations (forces).

A body is projected with a velocity of 160 ft. at an angle of 30 degrees to the horizon. How far from the point of projection will it be after an interval of 3 secs.. and what will be its velocity then?

4. Enunciate Newton's Laws of Motion, and explain the terms rest, motion, action, and the phrase, change of motion.

Define the absolute or kinetic, and the gravitation or static units of force, and state approximately the ratio they bear to each other.

5. Briefly describe Atwood's Machine, and explain how it is used to verify the laws of motion.

Two equal masses supported by a perfectly flexible cord passing over a frictionless pulley are at rest. A mass of one ounce is placed on one of them, which descends with it 3 feet. The ounce mass is then removed, and the equal masses are found to move on

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with a uniform velocity of 4 ft. per second. Determine the measure of each of the equal masses. Find also the tension of the string—1st, before, 2nd, after, the removal of the ounce mass.

6. Assuming the parallelogram of forces, prove that if two forces whose lines of action meet in a point, be represented in relative direction by OA, OB, and in magnitude by m.OA, n.OB, their resultant will be represented in direction by OG, and in magnitude by $(m+n)$OG, the point G being taken in AB, so that m.GA $=$ n.GB.

The quadrilateral ABCD is held in equilibrium by forces which act along the sides AB, AD, CB, CD, and which are proportional to a, d, b, c times those sides respectively. Show that $ac=bd$.

7. Show that the algebraic sum of the moments about any point of two forces whose lines of action intersect, is equal to the moment of their resultant.

A straight rod, weighing 4 lbs. per foot of its length, balances about a point 3 ft. from one end when weighted with 48 lbs. at that end. Find the length of the rod.

Education Department, Ontario.

JULY EXAMINATIONS, 1883.

FIRST CLASS TEACHERS—Grade C.

GEOGRAPHY.

Time—Two Hours.

Candidates to take only four questions, of which Nos. 2, 3, and 6 will form three.

1. Account for the formation of mountains. Under the following heads tell what you know of the Andes—*(a)* Extent, *(b)* noted peaks, *(c)* vegetation, *(d)* influence on the different countries of the continent.

2. Name definitely the places in Canada where are found the following:—Coal, iron, gold, coal oil, phosphate.

3. Draw a map showing clearly the boundaries between Canada and the United States, and marking the principal cities of the latter country found near its northern boundary.

4. Name, in order, the capes, islands, bays, gulfs, rivers, and cities of Europe, passed on a coasting trip from Gibraltar to Constantinople.

5. Write a geographical account of Russia, giving its physical features, its imports and exports, and describing it socially and commercially.

6. Give the chief commercial and manufacturing centres of France and Germany, telling for what each is famous.

Education Department, Ontario.

JULY EXAMINATION, 1883.

FIRST CLASS TEACHERS—GRADE C.

ALGEBRA.

TIME—THREE HOURS.

1. If $x^n + ax^{n-1} + \ldots\ldots + sx + t = 0$, explain the principle upon which we proceed to find, if possible, a rational binomial divisor.

Find three such divisors in the equation,

$$x^6 - 4x^5 - 6x^4 + 18x^3 + 17x^2 + 22x + 24 = 0.$$

2. Express $m^4 - 4m^3n + 5m^2n^2 - 2mn^3 + n^4$ as a rational integral function of p and n, where $p = m - n$.

3. If y is a rational integral function of x, and y becomes zero when a is substituted for x, prove that $x - a$ is a factor of y.

Resolve into factors—

$$x^3 - \{a(a-b) + b(b-c) + c(c-a)\}x + \{ab(a-b) + bc(b-c) + ca(c-a)\}$$

4. If $\frac{a}{b} = \frac{c}{d}$ prove that $\frac{ma+nb}{ma-nb} = \frac{mc+nd}{mc-nd}$.

If $$\frac{x^2 + \left\{\frac{m+n}{m-n} + \frac{m-n}{m+n}\right\}xy + y^2}{x^2 + \left\{\frac{m+n}{m-n} - \frac{m-n}{m+n}\right\}xy - y^2} = \frac{v+1}{v-1}$$

find the simplest expression for the value of v.

5. What is a ratio? Does the ratio of two quantities depend upon their magnitude?

Given $y^4 + x^3y - a^2x^2 = 0$, to find the ratio of x to y when x becomes indefinitely great.

6. What is meant by a *maximum* or a *minimum* solution?

It is required to divide a number a into two parts such that the quotient arising from dividing their product by the sum of their squares may be a minimum. Determine the quotient, and the division of the number required to produce it.

7. In an arithmetic series, find an expression giving the last term in terms of the first term the common difference and the sum of the series.

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The *n*th terms of two *A.P.'s* are respectively $\frac{1}{3}(n+2)$ and $\frac{1}{2}(3n-1)$. The same number of terms being taken in each series, what is the number when the sum of the second series is four times that of the first?

What is the *greatest* ratio of the sum of any number of terms of the second series to the sum of the same number of terms of the first?

8. The attraction of a planet upon a body at its surface varies directly as the planet's mass and inversely as the square of its radius. The length of a pendulum varies directly as the attraction and inversely as the square of the number of beats which it makes in a given time. The mass of the earth being 75 and of the moon 1, the radius of the earth 4,000 miles and of the moon 1,100, and the length of a pendulum which beats 5 times in 2 seconds at the earth's surface being 6.26 in., find the length of a second's pendulum at the moon's surface.

9. From a company of 15 men 6 are selected each night as a guard. How often, respectively, will A and B be together (1) with C? (2) without C? (3) with C or D? (4) with C and D?

10. Given $x^2 + \frac{a-b}{ab}x + \frac{ab}{a-b} = 0$.

(1) Express b in terms of a when the two values of x are (α) equal in magnitude and opposite in signs; (β) equal in magnitude and of like signs.

(2) If x_1 x_2 be the roots, express the value of $\frac{1}{x_1} + \frac{1}{x_2}$ in terms of a and b.

Education Department, Ontario.

JULY EXAMINATIONS, 1883.

FIRST CLASS TEACHERS - GRADE C.

HISTORY.

TIME—THREE HOURS.

1. What alterations were introduced into the law of high-treason by the statute of William III.? On what grounds does Hallam think that this statute "ought to be considered a valuable accession to our constitutional law"?

Describe Anderton's case.

2. State the chief articles of the Treaty of Utrecht. What were the principal arguments for and against the ratification?

3. Describe briefly the means by which the power of the Crown was enhanced during the reigns of George I. and II. What is meant by the expression "power of the Crown" under William III. and George II. respectively?

4. Give an account of the religious revival in the reign of Geo. II.; and describe briefly the social condition of England at that time.

5. Descrice briefly the warlike operations of the year 1759 (1) in Europe, (2) in America.

6. The struggle for American Independence has been called a struggle between two Englishmen, George III. of England and George Washington. Examine the truth of this statement, and show by what means George III. obtained the power which he possessed at this epoch.

7. Describe Pitt's financial policy during the ten first years of his administration, and his attitude towards France from the outbreak of the Revolution to the Declaration of War.

8. Give an account of the Peninsular War under the Duke of Wellington, with dates.

NOTE.—Six questions only are to be attempted.

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JUNE EXAMINATION, 1883.

FIRST CLASS TEACHERS—GRADE C.

ARITHMETIC.

TIME—THREE HOURS.

Results must be completely worked out and not left in merely an indicated form.

1. Define a recurring decimal, and classify the several kinds.

Prove, in any way, a rule for converting a mixed circulating decimal into its equivalent vulgar fraction, and apply your rule to convert $.10132\dot{5}\dot{7}$.

2. Peform the operations here indicated, employing contracted multiplication and division, and retaining six decimals throughout:

$$\frac{.3472 + .03172}{6146.38} \div .0004675.$$

3. In the expression "six per cents are at 103," explain fully what is meant.

A person sells a certain amount of 5 per cents for 86, and invests in the 6 per cents at 103, and by so doing changes his income by one dollar.

Is the change an increase or a decrease? How much stock did he sell?

4. A man buys a note, drawn for 2 years at 6 per cent. interest, and which is now 6 months old, at 15 per cent. true discount. After keeping it 9 months, and receiving one payment of interest, he sells it to a bank at 8 per cent bank discount. What per cent. does he make upon his money while invested?

5. A, B and C, whose rates of walking are $3\frac{1}{2}$, 4 and 5 miles an hour respectively, walk on circular tracks whose circumferences are 8, 10 and 15 miles respectively, and whose centres are in the same straight line. At the same instant they start from points on this line, and on the same side of the centres. Find (1) when first they will be all on this line at the same time; (2) all at same time at the points from which they started; (3) whether they will ever be all at the same instant at points on opposite sides of the circles to the starting points.

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6. Lead is 11.4 times, and zinc 7.2 times as heavy as water. If 3 pounds of lead and 2 pounds of zinc be melted together, compare the weight of the alloy with that of water.

7. A, B and C start at the same time, and from the same point, to travel around an island 26 miles in circuit. A goes 10 miles and B 4 miles per hour in the same direction, and C goes 5 miles per hour in the opposite direction. When and where will they first be all together again?

Algebraical symbols will be allowed in the three following questions:—

8. It is required to make a hollow leaden cylinder open at both ends, 10 inches long, with its wall one inch thick, and which is to weigh 25 pounds. Find its outside diameter.

9. A conical vessel 6 inches deep and 3 inches across the mouth is filled to 5 inches with water. Find the diameter of the sphere which, when dropped into the cylinder, will raise the water so as just to fill the vessel.

10. The diagonals of a quadrilateral plane figure are 10 and 12, and they intersect at an angle of 60°, to find the area of the figure.

Education Department, Ontario.

JULY EXAMINATIONS, 1883.

FIRST CLASS TEACHERS—GRADE C.

ENGLISH LITERATURE.

TIME—TWO HOURS AND A HALF.

1. Contrast the characters of Richard II. and Bolingbroke, giving illustrative quotations from your play. Show the appropriateness of the opening incident of the play.

2. Write explanatory and historical notes on the following extracts:—

(*a*) This dear, dear land | Is now leased out (I die pronouncing it)
Like to a tenement, or pelting farm.

(*b*) If you do wrongfully seize Hereford's right,
Call in the letters-patents that he hath
By his attorneys-general to sue
His livery, and deny his offer'd homage,
You pluck a thousand dangers on your head.

(*c*) And if you crown him, let me prophesy,—
The blood of England shall manure the ground,
And future ages groan for this foul act.

(*d*) If then we shall shake off our slavish yoke,
Imp out our drooping country's broken wing,
Redeem from broking pawn the blemish'd crown,
Wipe off the dust that hides our sceptre's gilt,
And make high majesty look like itself,
Away with me in post to Ravenspurg.

3. What was the "atrocious spectacle of the 6th of October, 1789?" Give a resumé of Burke's "reflections" thereon.

4. "A perfect democracy is therefore the most shameless thing in the world. As it is the most shameless, it is also the most fearless." Give a summary of the reasoning by which Burke arrives at these conclusions.

5. Describe Mirabeau's attitude towards the Revolution.

6. Give an account of the life and writings of Cowper.

7. Write criticisms on any two of the following works, with dates:—Piers the Plowman; The Faerie Queen; Absalom and Achitophel; Hudibras; The Dunciad; The Decline and Fall of the Roman Empire.

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8. Give an account of the contents of the sixth canto of Marmarion; *or*,

Write explanatory notes on the following extracts:

(*a*) For wealth was theirs (the Italians'), not far removed the date,
When commerce proudly flourish'd through the state;
At her command the palace learn'd to rise,
Again the long-fall'n column sought the skies;
The canvas glow'd beyond e'en nature warm,
The pregnant quarry teem'd with human form:
Till, more unsteady than the southern gale,
Commerce on other shores display'd her sail:

(*b*) Methinks her (Holland's) patient sons before me stand,
Where the broad ocean leans against the land
And, sedulous to stop the coming tide,
Lift the tall rampire's artificial pride.

(*c*) Have we not seen at pleasure's lordly call
The smiling long frequented village fall?

(*d*) The lifted axe, the agonizing wheel,
Zeck's iron crown, and Damien's bed of steel,
To men remote from power but rarely known,
Leave reason, faith, and conscience, all our own.

Education Department, Ontario.

JULY EXAMINATIONS, 1883.

FIRST CLASS TEACHERS—Grade C.

COMPOSITION.

Time—One Hour.

1. Re-write, in your own words—so as to bring out fully the sense—the following passage :—

“Observe, however, that of man's whole terrestrial possessions and attainments, unspeakably the noblest are his symbols, divine, or divine-seeming; under which he marches and fights, with victorious assurance, in this life-battle: what we call his Realised Ideals. Of which realised Ideals, omitting the rest, consider only these two: his Church, or spiritual Guidance; his kingship, or temporal one. . . . . How such Ideals do realise themselves: and grow, wondrously, from amid the incongruous, ever-fluctuating chaos of the Actual: this is what World-History, if it teach anything, has to teach us. How they grow: and, after long stormy growth, bloom out mature, supreme: then quickly (for the blossom is brief) fall into decay: sorrowfully dwindle: and crumble down or rush down, noisily or noiselessly disappearing. The blossom is so brief: as of some centennial Cactus-flower, which after a century of waiting shines out for hours. . . . . But of those decadent ages in which no Ideal either grows or blossoms? When Belief and Loyalty have passed away, and only the cant and false echo of them remains: and all Solemnity has become Pageantry: and the Creed of persons in authority has become one of two things: an Imbecility or a Machiavelism? Alas, of these Ages, World-History can take no notice; they have to become compressed more and more, and finally suppressed in the Annals of Mankind: blotted out as spurious,—which indeed they are. Hapless ages: wherein, if ever in any, it is an unhappiness to be born. To be born, and to learn only, by every tradition and example, that God's Universe is Belial's and a Lie. In which mournfulest faith, nevertheless, do we not see whole generations (two, and sometimes even three successively) live, what they call living: and vanish,—without chance of reappearance.”– *Carlyle: French Revolution, Vol. i., Bk. I., c.* 2.

Or,

2. Write a composition on one of the following subjects:
(*a*) The French Revolution of 1789.
(*b*) Patriotism.
(*c*) Lord Macaulay.
(*d*) The Establishment of Responsible Government in Canada.

Education Department, Ontario.

JULY EXAMINATIONS, 1883.

FIRST CLASS TEACHERS—GRADE C.

HYDROSTATICS AND HEAT.

TIME—TWO HOURS AND A HALF.

(Six questions to constitute a full paper. Candidates are not to send up answers to more than six questions.)

1. Distinguish between the total normal pressure and the resultant pressure of a liquid on a submerged surface, and state in what case they are the same.

A triangle whose base is 6 inches and altitude 5 inches is immersed in water, the base being horizontal and at a depth of 8 inches and the vertex at a depth of 11 inches. Find the whole pressure.

2. Explain the construction and the method of graduation of the common hydrometer.

A common hydrometer floats in water with three inches of the stem above the surface: in a liquid of density .6 it floats with one inch of the stem above the surface. Find the density of a liquid in which it floats with two inches of the stem above the surface.

3. State the relation connecting the volume, the pressure and the temperature of a perfect gas.

Two volumes of oxygen of density .00141 are mixed with five volumes of nitrogen of density .00124 and the whole compressed to occupy two volumes. Find the resulting density. If the pressure before reduction of volume was 15 lbs. per square inch, find the pressure after reduction, the mixture being brought to the initial temperature of the gases.

4. Describe the construction of the mercury barometer, and state what corrections in its readings are necessary to give the true atmospheric pressure.

When the readings of a perfect mercurial barometer are 29.5 in. and 30.5 in., the corresponding readings of one with an imperfect vacuum are 26.2 in. and 27 in. Prove that when the readings of the faulty barometer is 26.5 in. the reading of the other will be 29.87 in., approximately.

5. What in general is the effect of change of temperature on the

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volume of a body? Mention exceptions to the general rule (*a*) in the case of solids, (*b*) in the case of liquids, (*c*) in the case of liquifaction.

A weight-thermometer, which contains 7,000 grains of mercury at zero centigrade, has its temperature raised till 70 grains overflow. Find the temperature, given that the expansion of mercury in glass is .000,153.

6. State the advantages and the disadvantages of the spirit and the mercury thermometer respectively.

The liquid in a spirit thermometer plunged into hot water, was observed first to fall and then to rise. What was the cause of the fall?

7. Explain the terms *specific heat* and *latent heat.*

A pound of ice at temperature —18°C. is placed in 3 ounces of steam at 110°C. Find the resulting temperature; given that the specific heat of ice is .505, and of steam is .4805, and that the heat of liquifaction of ice is 79.25 and of vaporization of water is 536.

8. Explain the terms *humidity*, *dew-point*, temperature of evaporation.

Briefly explain the deposition of dew and of hoar-frost. Why do clouds, much smoke, or strong winds hinder or prevent the deposition of dew?

9. How much heat will escape in a day through the walls of a building if their area be 1600 sq. ft., their thickness 9 inches, their conductivity .0000016 ft. degs. per sec., and the difference between their inside and their outside temperature 10°C? What weight of coal would, by combustion, yield the same amount of heat, if a pound of coal burned in a common stove generates 48 ft. degs.?

Education Department, Ontario.

JULY EXAMINATION, 1883.

FIRST CLASS TEACHERS—GRADE C.

EUCLID.

TIME—THREE HOURS.

1. The three angles of a triangle are together equal to two right angles.

If triangles be formed on the sides of a polygon of n sides by producing the alternate sides to meet, the sum of the vertical angles of these triangles is equal to $2n - 8$ right angles.

2. Establish the converse of the following: The complements of the parallelograms, which are about the diameter of any parallelograms, are equal to one another.

3. To divide a given straight line into two parts, so that the rectangle contained by the whole and one part may be equal to the square on the other part.

Point out all the lines in the figure that are divided similarly to the given line.

4. By the assistance of Prop. 12, Bk. II., when the sides of a triangle are 25, 45 and $20\sqrt{10}$ find its area.

5. If in a circle all possible chords be drawn passing through the same point in the circumference, and these chords be doubled in length by production, the locus of the extremities of the lines so formed is a circle.

6. The angles in the same segment of a circle are equal to one another.

If a line of constant length move with its extremities in two fixed lines, and at the ends of the first line lines be drawn perpendicular to the two fixed lines, the locus of the intersection of these lines is a circle.

7. ABC is a triangle, C being a right angle On CA, CB are described segments of circles containing angles equal to CBA, CAB respectively. Shew that the circles of which these segments are parts touch one another.

[OVER

8. In a given triangle to inscribe a circle.

If the points of contact be joined shew that the triangle thus formed can be equiangular to the original triangle only in the case in which both are equilateral.

9. Shew, after the manner of Euclid, that triangles are to one another in the ratio compounded of the ratios of their bases and altitudes; and prove that this is algebraically equivalent to product of ratios.

10. Similar triangles are to one another in the duplicate ratio of their homologous sides.

Two circles touch, and through the point of contact lines are drawn cutting the circles, and the ends of these lines are joined. Prove that the triangles so formed are as the squares of the diameters of the circles.

Education Department, Ontario.

JULY EXAMINATIONS, 1883.

FIRST CLASS TEACHERS—GRADE C.

ENGLISH GRAMMAR.

TIME—THREE HOURS.

O myriads of immortal spirits, O Powers
Matchless, but with th' Almighty; and that strife
Was not inglorious, though th' event was dire,
As this place testifies, and this dire change
Hateful to utter: but what power of mind,
Foreseeing or presaging, from the depth
Of knowledge past or present, could have feared,
How such united force of gods, how such
As stood like these, could ever know repulse?
For who can yet believe, though after loss,
That all these puissant legions, whose exile
Hath emptied Heav'n, shall fail to reascend
Self-raised, and repossess their native seat?
For me, be witness all the host of Heav'n,
If counsels different or danger shunn'd
By me have lost our hopes: but he who reigns
Monarch in Heav'n, till then as one secure
Sat on his throne, upheld by old repute,
Consent or custom, and his regal state
Put forth at full, but still his strength concealed;
Which tempted our attempt, and wrought our fall.

—*Par. Lost, Bk. I.*

1. Parse—'matchless', l. 2; 'as', l. 4; 'to utter', l. 5; 'from', l. 6; 'how', l. 8; 'as', l. 9; 'for, after', l. 10; 'to reascend', l. 12; 'self-raised', l. 13; 'for', l. 14; 'till', 'then', 'as', 'secure', l. 17; 'which', l. 21.

2. Paraphrase ll. 14-16, bringing out clearly their meaning.

3. Divide into propositions, stating their kind and relation, ll. 1-13: analyze fully such as are dependent.

4. Write explanatory notes on the constructions: 'but with', l. 2; 'knowledge past or present', l. 7; 'to reascend self-raised', ll. 12, 13; 'for me', l. 14; 'tempted our attempt', l. 21.

5. Derive—'testifies', l. 4; 'utter', l. 5; 'puissant', l. 11; 'Heav'n', l. 12; 'repossess,' l. 13; 'counsels', l. 15.

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6. Write a short paper on the use of the participle. Illustrate by examples found in the passage from "Paradise Lost" quoted above.

7. Write brief notes on the inflections of the noun that still remain in English.

8. Criticise the following definitions of the preposition; tell, with reasons, which you consider the best:—

(*a*) "A word showing the relation of two other words in the same sentence."
(*b*) "A word placed before a noun or pronoun, to show its relation to some other word of the sentence."
(*c*) "A word whereby a noun is joined to a verb."
(*d*) "A word showing the relation of a substantive either to another substantive or to a verb."
(*e*) "A word prefixed to a noun or pronoun (or equivalent) to make a qualifying or adverbial phrase."
(*f*) "A word that will combine only with nouns and pronouns."

9. Tell, briefly, when and by what means the various elements now forming the English language were introduced. Estimate their relative importance, and give two words from each source.

10 Mark clearly the pronunciation of deficit, telegraphy, epoch, finance.

11. Correct, giving reasons, the following:—

"Sea captains are among the most valuable contributors to the Park aviary."

"Have you ever before seen such a high steeple"?

"The greatest of Byron's works was his whole work taken together."

"The unwearied exertions of this gentleman have done more towards elucidating the obscurities of our language than any other writer on the subject."

"Scott's works were the daily food not only of his countrymen, but of all educated Europe."

"He has visited several countries as a public minister where he formerly wandered as a gipsy."

"It seems that the catalogue derives its origin from Hermippus enumerating the titles of the books in the Alexandrine library."

"Nature is a term of too vague significance to be used in reasoning."

Education Department, Ontario

JULY EXAMINATION, 1883.

SECOND CLASS TEACHERS.

GEOGRAPHY.

TIME—ONE HOUR AND A HALF.

Values.	
15	1. What are the causes of tides? Why are they great at certain times? Illustrate by a diagram.
20	2. Describe the canal system of Ontario. Give the reason for the construction of each and the waters it connects.
15	3. What are the manufacturing districts of England? Name and locate the chief towns in each.
15	4. Give, in groups, the inland rivers of Ontario emptying into Lakes Huron, St. Clair, Erie and Ontario, with the cities and towns on their banks.
15	5. Give the geographical position and political relation of Cyprus, Macao, Nubia, Sumatra, Mauritius Island, Senegal and Madeira.
20	6. Trace, from source to mouth, the Rhine, Danube and Ganges, naming four important cities on each, and giving the chief tributaries.

Education Department, Ontario.

JULY EXAMINATIONS, 1883.

SECOND CLASS TEACHERS.

HISTORY.

TIME—TWO HOURS.

Values.	
15	1. Show how the internal condition of Rome and Carthage respectively led to the final triumph of the former.
15	2. Sketch the political condition of Rome at the death of Sulla, and point out the causes that led to the ultimate establishment of a monarchical form of government.
5	3. Show how Britain became England.
15	4. Sketch the political, social and intellectual condition of England under Edward III.
15	5. Give a brief account of the relations subsisting between England and Scotland, from the accession of Edward I. to that of James I.
15	6. Give an outline of the part borne by England in European politics during the reign of Louis XIV.
10	7. Sketch briefly the history of Canada under the French Régime, from the arrival of Champlain.
10	8. State the causes and effects of the troubles of 1837 in Upper and Lower Canada respectively.

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JUNE EXAMINATION, 1883.

SECOND CLASS TEACHERS.

COMPOSITION.

TIME—ONE HOUR AND A HALF.

I.

Write in prose, in your own language, the substance of the following poem:—

Value—25.

Fear death?—to feel the fog in my throat,
The mist in my face,
When the snows begin, and the blasts denote
I am nearing the place,
The power of the night, the press of the storm,
The post of the foe;
Where he stands, the Arch Fear in a visible form,
Yet the strong man must go:
For the journey is done and the summit attained,
And the barriers fall,
Though a battle 's to fight ere the guerdon be gained,
The reward of it all.
I was ever a fighter, so—one fight more,
The best and the last!
I would hate that death bandaged my eyes, and forbore,
And bade me creep past.
No! let me taste the whole of it, fare like my peers
The heroes of old,
Bear the brunt, in a minute pay glad life's arrears
Of pain, darkness and cold.
For sudden the worst turns the best to the brave,
The black minute 's at end,
And the elements' rage, the fiend-voices that rave,
Shall dwindle, shall blend,
Shall change, shall become first a peace out of pain,
Then a light, then thy breast,
O thou soul of my soul! I shall clasp thee again,
And with God be the rest!

N.B.—The Candidate must write a composition besides the paraphrase of the poem given above.

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II.

Value—50.

(*a*) Give an abstract of Burke's arguments in favour of an Established Church; or

(*b*) Write a composition on one of the following subjects:—

- (i.) The choice of a profession;
- (ii.) The duties of a citizen to the Ssate;
- (iii.) " Virtue itself turns vice, being misapplied."—*Shakespeare.*

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JULY EXAMINATIONS, 1883.

SECOND CLASS TEACHERS.

DICTATION.

TIME—THIRTY MINUTES.

Note for the Presiding Examiner—This paper is not to be seen by the candidates. It is to be read to them *three times—first*, at the ordinary rate of reading, they simply paying attention, to catch the drift of the passage; *second*, slowly, the candidates writing; *third*, for review.

VALUE—22.

He is thus attempting the greatest task to which poet or philosopher can devote himself—the exhibition of an organic and harmonious view of the universe. In a time when men's minds are dominated by a definite religious creed, the poet may hope to achieve success in such an undertaking without departing from his legitimate method. His vision pierces the world hidden from our senses, and realizes in the transitory present a scene in the slow development of a divine drama. When Milton told his story of the war in heaven and the fall of man, he gave implicitly his theory of the true relation of man to his Creator, but the abstract doctrine was clothed in the flesh and blood of a concrete mythology. In Pope's day the traditional belief had lost its hold upon men's minds too completely to be used for imaginative purposes. Nothing was left possessed of any vitality but a bare skeleton of abstract theology dependent upon argument instead of tradition, and which might use or might dispense with a Christian phraseology. Its deity was not an historical personage, but the name of a metaphysical conception. To vindicate Providence meant no longer to stimulate imagination by a pure and sublime rendering of accepted truths, but to solve certain philosophical problems, and especially the grand difficulty of reconciling the existence of evil with divine omnipotence and benevolence.

Education Department, Ontario.

JULY EXAMINATION, 1883.

SECOND CLASS TEACHERS.

CHEMISTRY.

TIME—ONE HOUR AND A HALF.

Values.	
10	1. State the law of equivalent proportions, and explain your statement by examples.
24	2. Give the symbols, the molecular weights and the vapour densities (noting peculiarities) of the following compounds:—Carbon monoxide, nitric oxide, heavy carburetted hydrogen, sulphuretted hydrogen, ammonium chloride, phosphorous pentachloride, sulphurous acid (hydrogen sulphite), and carbonic acid (hydrogen carbonate).
15	3. Describe the preparation of hydrogen by the action of sulphuric acid on zinc. If, while the action is proceeding, concentrated sulphuric acid be added, what will be the result?
15	4. Describe the preparation and properties of nitrous oxide. How could you distinguish nitrous oxide from a mechanical mixture of two volumes of nitrogen and one of oxygen?
15	5. Describe the preparation of ammonia from sal ammoniac, and by means of an equation explain the reaction that takes place. How would you illustrate the basic properties of ammonia?
15	6. Describe the preparation and properties of carbon monoxide. How could you distinguish carbon monoxide from carbon dioxide, and from the carburetted hydrogens?
16	7. What action has chlorine at ordinary temperatures, but exposed to the influence of sunlight, on the following named substances:—Hydrogen, nitrogen, carbon, phosphorus, water, sulphuretted hydrogen, aqueous solution of ammonia and aqueous solution of sulphur dioxide?

Education Department, Ontario

JULY EXAMINATIONS, 1883.

SECOND CLASS TEACHERS.

NATURAL PHILOSOPHY.

TIME—TWO HOURS.

Values.

10 1. Explain what is meant by the statement 'The body A is at rest relative to the body B'. Give illustrations.

If a body in motion be acted upon by three forces in equilibrium, what will be the result with respect to the motion of the body?

20 2. Explain the geometrical representation of forces.

Two forces acting in lines which meet in a point are represented by the straight lines AB, AC; show that their resultant is represented by 2AD, where D is the point of bisection of the straight line BC.

Four forces acting in lines which meet in a point are represented by the straight lines AC, BC, AD, BD; show that their resultant is represented by 4EF, where E and F are the respective points of bisection of the diagonals AB, CD of the quadrilateral ACBD.

25 3. What are the conditions of equilibrium of two forces?

What are the conditions of equilibrium of three forces—

1st, if two of them are parallel to one another;
2nd, if there are two not parallel to one another?

A body is pulled N., S., E. and W. by strings whose directions meet in a point, the forces of tension along the strings being equal to 26, 110, 75 and 88 lbs. weight respectively. Show that these forces may be balanced by a force of 85 lbs. weight in the proper direction, and by no other single force whatever.

20 4. What is meant by the moment of a force about a given point? How is the moment of a force about a point measured? State the principle of moments.

A straight pole 12 ft. long and weighing 40 lbs. balances, when unweighted, about a point 5 ft. from one end. When loaded with 2 lbs. at this end and 10 lbs. at the other end, at what point must it be supported in order to balance?

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Values.

15 5. Find the relation between the power and the weight in a system of pulleys in which one cord passes round all the pulleys and has its different portions parallel, neglecting friction and the rigidity of the cord, but taking account of the weight of the pulleys.

In such a system what power will sustain a weight (including the lower sheaf of pulleys) of 945 lbs., if the number of cords at the lower block be seven?

10 6. Four pine planks (specific gravity ·48) 16 feet long, 12 inches wide and 2½ inches thick, are bound together to form a raft. Find the greatest load the raft will bear without sinking, granted that a cubic foot of water weighs 1,000 oz.

10 7. Describe the common pump and explain the principle of its action.

Education Department, Ontario.

JULY EXAMINATIONS, 1883

SECOND CLASS TEACHERS.

ARITHMETIC.

TIME—TWO HOURS.

Values.

7 1. *Prove* that $\frac{1}{4}$ of $\frac{3}{7} = \frac{3}{28}$.

6 Simplify

$(2\frac{2}{7} \text{ of } 3\frac{1}{16}) + \frac{4}{9} - (1\frac{1}{3} \text{ of } 1\frac{5}{16}) - (1\frac{3}{4} \text{ of } 4\frac{4}{7} \text{ of } \frac{3}{14})$.

11 2. The pendulum of one clock makes 24 beats in 26″; that of another 36 beats in 40″. If they start at the same time, when first will the beats occur together?

11 3. *A* can do as much work in 4 hours as *B* in 6; and *B* in $3\frac{1}{2}$ as *C* in 5. *A* does half a certain piece of work in 12 hours: in what time can it be finished by *B* and *C*, working separately equal times, and *C* succeeding *B*?

10 4. A note for $500, made March 9th at three months, is discounted April 11th, at 8 per cent. What is received for the note? (True discount).

10 5. The unclaimed dividends on a certain amount of stock which pays 6 per cent. per annum amounted in 3 years to $1152. The stock was sold at a discount of $12\frac{1}{2}$ per cent. on its par value. What sum was realized?

10 6. Teas at 3*s.* 6*d.*, 4*s.* and 6*s.* a pound are mixed to produce a tea worth 5*s.* a pound. What is the least integral number of pounds that the mixture can contain?

11 7. A man buys 150 lbs. of sugar, and after selling 100 lbs. finds he has been parting with it at a loss of 5 per cent. At what rate per cent. advance on the cost must he sell the remaining 50 lbs. that he may gain 10 per cent. on the entire transaction?

11 8. Each member of a pedestrian club walks as many miles as there are members in the club, and the expense

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of the trip is for each member as many pence per mile as there are members in the club. The total expense is £50 13*s*. 11*d*. How many members are there?

13 9. The hour, minute and second hands of a watch are on concentric axes. When first, after 12 o'clock will the direction of the second hand produced backwards bisect the angle between the hour and the minute hands?

Education Department, Ontario

JULY EXAMINATIONS, 1883.

SECOND CLASS TEACHERS.

EUCLID

TIME—TWO HOURS.

Values.

10 1. With three given straight lines only one triangle can be formed.

8 What is the character of the triangle formed by the lines whose lengths are given by $\sqrt{27}$, $\sqrt{48}$ and $\sqrt{125}$?

8 2. If one side of a triangle be produced the exterior angle is equal to the sum of the two opposite interior angles.

8 ABC is an isosceles triangle, having the equal angles at B and C. BF and CF are drawn bisecting the angles B and C and intersecting in F.

Show that the angle BFC is equal to the sum of the vertical angle and one of the basal angles.

8 3. The sum of the interior angles of any rectilineal figure is $2(n-2)$ right angles, where n denotes the number of sides.

8 Prove this and examine it if be true when the figure has one reëntrant angle.

10 4. ABC is a triangle, and AD bisects the base BC in D. Show that the sum of the squares upon the two sides is equal to twice the square upon half the base, together with twice the square upon the bisecting line.

10 KLMN is a square, O the point of intersection of its diagonals, and P any point whatever.

$PK^2 + PL^2 + PM^2 + PN^2$ is greater than four times PO^2 by the square upon the diagonal.

10 5. In any triangle the square upon the side subtending an acute angle is less than the squares upon the sides containing the angle by twice the rectangle contained by one of those sides and the line intercepted between the acute angle and the perpendicular let fall upon it from the opposite angle. (Euc. II. 13).

[OVER.

Values.	
10	6. In the triangle ABC, the perpendiculars BD and CE from B and C upon the opposite sides intersect in F. Show that the rectangle contained by BF and BD is equal to that contained by BE and BA.
10	7. In Euc. II. 11, find a point H in AB produced so that AB·BH is equal to the square upon AH.

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JULY EXAMINATIONS, 1883.

SECOND CLASS TEACHERS.

ALGEBRA.

TIME—TWO HOURS.

Values.

7 1. (1). If $x^2 - mx + 1 = 0$, express

$$\frac{1}{x^2}(x^4 - 3x^3 + 2x^2 - 3x + 1) \text{ as a function of } m.$$

4, 3 (2). If $x + y = m$, and $xy = n$, express $x^3 + y^3$, and

$$\frac{1}{x^2} + \frac{1}{y^2} \text{ in terms of } m \text{ and } n.$$

6 2. If $cx + sy = \sqrt{a^2c^2 + b^2s^2}$

$-sx + cy = \sqrt{a^2s^2 + b^2c^2}$

and $c^2 + s^2 = 1$,

then $x^2 + y^2 = a^2 + b^2$.

5 3. If a, b be integers, and $\frac{a}{b} = \frac{3}{4}$, then a is a multiple of 3, and b is the same multiple of 4.

5 4. (1). Simplify

$$\sqrt{x^2 - y^2}\,\sqrt{x^3 + y^3}\,\sqrt{x^3 - y^3}\,\sqrt{x^4 + x^2y^2 + y^4}.$$

6 (2). Extract the square root of

$$\frac{x^2}{9y^2} + \frac{2x}{3y} + \frac{11}{9} + \frac{2y}{3x} + \frac{y^2}{9x^2}.$$

5. Solve the equations

5 (1). $x + \dfrac{24}{3x + 1} = 2x - 3\tfrac{1}{2}$.

5 (2). $6x + \sqrt{x} = 2$.

6. Solve the equations

6 (1). $x - y = 3$, $xy = 18$.

6 (2). $x^2 - xy = 3$, $x^2 - y^2 = 5$.

6 (3). $x - y = a$, $y - z = b$, $z + x = c$.

[OVER.

Values.

5 7. (1.) Solve the equation $ax^2 + bx + c = 0$, and interpret
7 your result according as $a = 0$, or $b = 0$, or $a = b = 0$.
7 (2.) If $a + b + c = 0$, find values of x that will satisfy

$$\frac{a}{x+b} + \frac{b}{x+c} + \frac{c}{x+d} = 0.$$

9 8. If α, β be roots of $ax^2 + bx + c = 0$, and $\alpha + \beta$, $\alpha - \beta$ roots of $a'x^2 + b'x + c' = 0$, shew that $ab'^2 - 2a'bb' + 4a'^2c = 0$.

8 9. The sides of a box are all rectangles, and the areas of the unequal sides are $7\frac{1}{2}$, 15 and $4\frac{1}{2}$. Find the lengths of the sides.

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JUNE EXAMINATION, 1883.

SECOND CLASS TEACHERS.

MUSIC.

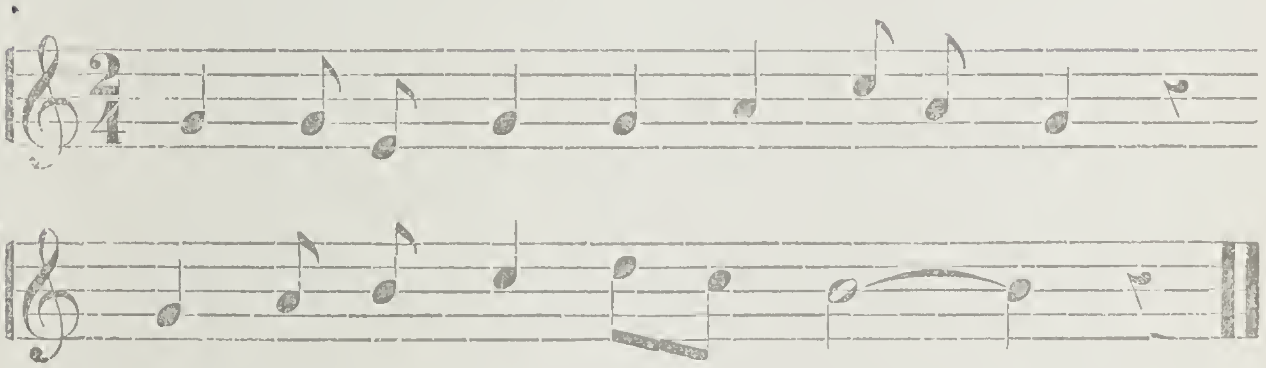
TIME—ONE HOUR.

1. What is a clef? Write example 10

2. Explain the use of the figures $\frac{6}{8}$ when placed at the beginning of a composition. 20

3. Write the scales of A major, and B major. 20

4. Supply bars in the following exercise, also write the proper scale number under each note:— 25



5. Transpose the preceding exercise to the key of D. 25

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JULY EXAMINATIONS, 1883.

SECOND CLASS TEACHERS.

ENGLISH LITERATURE.

TIME—TWO HOURS.

⁂ The value in the margin, opposite each question, under the heading M., is for the matter of the answer; the additional value, under F., is for its literary form.

Values.

M. F.

I.—BURKE.

We *spurn* from us with *disgust* and indignation the slanders of those who bring us their anecdotes with the *attestation* of the flower-de-luce on their shoulders. We have Lord George Gordon fast in Newgate; and neither his being a public proselyte to Judaism, nor his having, in his zeal against catholic *priests* and all sorts of ecclesiastics, raised a mob (excuse the term, it is still in use here) which pulled down all our *prisons*, have preserved to him a liberty, of which he did not render himself worthy by a virtuous use of it. We have rebuilt Newgate, and *tenanted* the *mansion*. We have prisons almost as strong as the Bastile, for those who dare to *libel* the queens of France. In this spiritual *retreat*, let the noble libeller remain.

9 (*a*) Give the etymology of the words in italics.

8 (*b*) Write explanatory notes on *flower-de-luce, Lord George Gordon, Newgate, Bastile.*

6 (*c*) Enumerate the words of Greek origin in the extract.

2 (*d*) Specify any violation of grammatical rules contained in the extract.

6 3 2. Specify the causes that led to the French Revolution, and compare that movement with the English Revolution of 1688.

NOTE—*Candidates are allowed an option between Scott's "Marmion" and Goldsmith's "Traveller."*

[OVER.

Values.

M. F.

II.—SCOTT'S MARMION.

1. I said, *Tantallon's* dizzy steep
Hung o'er the margin of the deep.
Many a rude tower and rampart there
Repelled *the insult of the air*,
Which, when the tempest vexed the sky,
Half breeze, half spray, came whistling by.
Above the rest, a turret square
Did o'er its *Gothic* entrance bear,
Of sculpture rude, a stony shield;
The *Bloody Heart* was in the field,
And *in the chief* three *mullets* stood,
The *cognizance* of Douglas blood.
The turret held a narrow stair,
Which, mounted, gave you access where
A parapet's embattled row
Did seaward round the castle go. —*Canto VI.*

14 2 (*a*) Write explanatory notes on the words in italics.

6 (*b*) Parse: *half spray* (6), *cognizance, Douglas* (12), *mounted, where* (14).

7 (*c*) Give the full etymology of: *repel, turret, entrance, chief, cognizance, access, parapet.*

2. Write explanatory notes on the words in italics in the following passages, and state in what connection they occur:—

3 (i.) "Imprinted at the antique dome
Of *Caxton* or *De Worde*."

5 (ii.) In painted *tabards*, proudly showing
Gules, Argent, Or and *Azure* glowing.

5 (iii.) "*A word of vulgar augury*,
That broke from me, I scarce knew why,
Brought on *a village tale*"

(iv.) "He gave rude Scotland *Virgil's page*."

3. "The flash of that satiric rage,
Which, bursting on the early stage,
Branded the vices of the age."

4 2 Give some account of the personage here alluded to.

10 4. Quote the 34th stanza of Canto VI, descriptive of the last stand made by the Scottish army, from "But as they left the darkening heath" to "wounded king."

4 2 5. Give an estimate of Scott as a poet, and mention his principal poems.

Values.

M. F.

III.—Goldsmith's Traveller.

1. Nature, a mother kind alike to all,
Still grants her bliss at labour's earnest call:
With food as well the peasant is supplied
On Idria's cliffs as Arno's shelvy side;
And, though the rocky-crested summits frown,
These rocks, by custom, turn to beds of down.
From art, more various are the blessings sent—
Wealth, commerce, honour, liberty, content;
Yet these each other's power so strong contest,
That either seems destructive of the rest:
Where wealth and freedom reign, contentment fails,
And honour sinks where commerce long prevails.

5 2 (*a*) Write out the meaning of this passage in your own language.

5 (*b*) Derive: *peasant, summit, custom, wealth, commerce, power, reign, prevail.*

4 (*c*) Write notes on: *Idria's cliffs, Arno's shelvy side.*

2 (*d*) Define, by a paraphrase, the exact force of the following prepositions in the connection in which they here occur: *by* custom; *from* art.

8 4 (*e*) Discuss the correctness of the opinions expressed by the poet in the last two lines of this extract, and show how he applies them to the various countries treated of in the present poem.

2. Write explanatory notes on the following passages, and state in what connection each occurs:—

2 (i.) Ye bending swains, that dress the flowery vale.

3 (ii.) The pregnant quarry teem'd with human form.

2 (iii.) The pasteboard triumph and the cavalcade.

3 (iv.) How often have I led the sportive choir,
With tuneless pipe beside the murmuring Loire.

3 (v.) Where lawns extend that scorn Arcadian pride,
And brighter streams than famed Hydaspes glide.

3 (vi.) Have we not seen, round Britain's peopled shore,
Her useful sons exchanged for useless ore?

6 (vii.) The lifted axe, the agonizing wheel,
Zeck's iron crown, and Damiens' bed of steel.

14 3 Quote Goldsmith's description of the Swiss peasant, from "Cheerful at noon" to "the nightly bed."

Education Department, Ontario.

JUNE EXAMINATION, 1883.

SECOND CLASS TEACHERS.

ENGLISH GRAMMAR.

TIME—TWO HOURS.

Values.

1. "It's wiser being good than bad;
It's safer *being* meek than fierce:
It's fitter being sane than mad.
My own hope is, a sun will pierce
The thickest cloud earth ever stretched;
That, after Last, returns the First,
Though a wide *compass* round be fetched;
That what began *best*, *can't* end worst,
Nor what God blessed once, prove accurst."—
ROBERT BROWNING.

10 (*a*) Analyze the last six lines of this extract.

2+4+4=10 (*b*) Complete the elliptical clauses in lines 1, 4 and 5, 8 and 9.

8 (*c*) Parse the words in italics.

2. Correct any errors in the following sentences, giving your reasons in each case:—

2 (i.) These facts were developed in the examination of a boy, whom it was alleged was an accomplice.

2 (ii.) I have been troubled 12 years with a white swelling on my right foot, and getting worse every year, and very painful, and breaking out in hot weather.

4 (iii.) A species of wild potatoes have been discovered on the table lands of South-Western Arizona, in altitudes of 8,000 to 12,000 feet, which is spoken of as superior in taste and flavour to the best cultivated potatoes.

4 (iv.) This semi-tropical land has many fascinating scenes, and there are enough seductive pleasures near by to induce one with anything like lethargic natural tendencies to be satisfied with the entrancing views presented of the coral reefs from the island on a calm day at low tide, without exciting one's-self to

[OVER.

take a trip to them; but once this is overcome, and the beauty of the coral, as it lies in its native beds, is realized, the result more than compensates for the pain.

4 (v.) A coroner's jury has returned a verdict of manslaughter against a constable. The victim was a young man who, it is alleged, he frightened to death by riding him down when under the influence of liquor.

2 (vi.) The early robin was too previous this spring.

4 (vii.) "March 21, spring commences." Any one whose red, weak, and flabby ear is still a source of pain discrediting this statement will please consult their almanac.

6 (viii.) Influenza with March has greatly risen, it having been last week over 10 per cent., while this week it attains 14.1 per cent. in degree of prevalence. What at first sight causes this to appear rather remarkable are the facts of the weather being of a generally uniform character, and having a small diurnal range; but we have a counter fact in the considerably larger amount of clouded sky than in several preceding weeks.

2 (ix.) Somebody spent Saturday night in the office, making themselves comfortable.

4 (x.) A youthful band of sneak thieves, which have given tradesmen considerable trouble, have been broken up

2 (xi.) A member of the House has received a letter stating that it is the intention of the Invincibles to dynamite Parliament after Easter.

4 (xii.) The land is altogether too heavy to be easy worked, and the land further west, where it is some lighter, will give much better results.

2 (xiii.) This will be welcome news to horse-dealers and others, who will likely be further informed as to the regulations.

2 (xiv.) We will have ice for three or four weeks yet in the bay.

2 (xv.) I always had to lay down during the day, and this almost every hour.

2 (xvi.) Neither the diocese of Winchester nor the social life of London were sufficient for his spirit.

15 3. Give and account etymologically for the feminine

Values.	
	forms of *man*, *king*, *sir*, and the masculine forms of *duck*, *bride*.
12	4. Give the original meaning of *whether*, *some*, *either*, *but*.
8	5. Mention four diminutives with different affixes.
3 + 12 = 15	6. In what different relations is the word "that" used? Form four sentences in each of which it occurs at least twice in different senses.
4 + 8 = 12	7. Distinguish between the participle and gerund, and give four examples of the use of each.
30	8. Give four derivatives of each of the following Latin words: *sedes*, *manus*, *fluo*, *patior*, *struo*, *moveo*; and two from each of the Greek words: *philos*, *grapho*, *strepho*.
4 + 8 = 12	9. Define the use of the following prefixes, and give two words containing each: *per*, *pre*, *ante*, *anti*.

Education Department, Ontario

JULY EXAMINATION, 1883.

SECOND CLASS TEACHERS.

LATIN AUTHORS.

TIME—ONE HOUR AND A HALF

Values.

I.

Translate:

15 Ipsi philosophi etiam illis libellis quos de *contemnenda* gloria *scribunt* nomen suum inscribunt: in eo ipso, in quo prædicationem nobilitatemque *despiciunt* prædicari de se ac se nominari *volunt.* Decimus quidem Brutus, summus ille vir et imperator, Attii amicissimi sui carminibus templorum ac monumentorum aditus exornavit suorum. Jam vero ille qui cum Ætolis Ennio *comite* bellavit Fulvius non dubitavit Martis manubias Musis consecrare.—CICERO, *pro Archia.*

9 1. Parse the words in italics, conjugating the verbs.

14 2. Write notes on the proper names.

2 3. *scribunt.* Why not subjunctive?

3 4. Mark the quantity of the penult in: *philosophi, inscribunt, imperator, amicus, aditus, Ætolis.*

2 5. *de contemnenda gloria.* In what other way may the same idea be expressed in Latin?

4 6. *eo ipso.* Give the gen. and dat. sing., and the neut. sing. nom., of both these pronouns.

5 7. *manubias.* Derive, and mention four other substantives used in the plural only.

II.

Translate:

15 Ipse, etsi res erat multae operae ac *laboris*, tamen commodissimum esse statuit omnes naves *subduci* et cum

[OVER.

Values.

castris una munitione conjungi. In his rebus *circiter* dies decem *consumit*, ne nocturnis quidem temporibus ad laborem militum intermissis. Subductus navibus castrisque egregie *munitis* easdem copias, quas ante, praesidio navibus reliquit, ipse eodem, unde *redierat*, proficiscitur. Eo cum venisset, majores jam undique in eum locum copiae Britannorum *convenerant* summa imperii bellique administrandi communi consilio permissa Cassivellauno; cujus fines a *maritimis* civitatibus flumen *dividit*, quod appellatur *Tamesis*, a mari circiter millia passuum octoginta.—CÆSAR, *Bellum Britann.*

5 1. Mark the quantity of the penult of all the words in italics.

18 2. Parse: *conjungi*, *consumit*, *intermissis*, *reliquit*, *eodem*, *redierat*, *proficiscitur*, *venisset*, *summa*, *dividit*, conjugating the verbs.

1 3. *multae operae.* How is the gen. here used?

1 4. *subduci.* On what does this verb depend?

1 5. *ad laborem.* What does the prepos. here express?

1 6. *quas ante.* Complete the sentence.

2 7. *praesidio navibus.* What construction is used here, and when is it employed?

2 8. *redierat—venisset.* Account for the mood in both cases.

2 + 6 =8 9. *quod appellatur.* Why is the pron. neuter? Give the rule. Distinguish between *quis* and *qui*, and give the gen. and dat. sing.

III.

Translate:

26
Tum vero *exarsit juveni* dolor *ossibus* ingens,
Nec *lacrimis caruere* genae; segnemque Menoeten,
Oblitus decorisque sui, *sociumque salutis*,
In mare *praecipitem* puppi deturbat ab alta: 175
Ipse gubernaclo rector *subit*, ipse magister;
Hortaturque viros, clavumque ad litora *torquet*.

Values.

At gravis ut fundo vix tandem *redditus* imo est
Jam senior madidaque fluens in veste Menoetes,
Summa *petit* scopuli, siccaque in rupe *resedit.*
Illum et *labentem* Teucri et risere natantem,
Et salsos *rident* revomentem pectore fluctus.
Hic laeta extremis est spes *accensa* duobus
Sergesto Mnestheique Gyan superare morantem.
—VIRGIL, *Æneid, Book V.*

26 1. Parse the words in italics, conjugating the verbs.

2 2. Distinguish between *oblĭtus* and *oblītus, decōris* and *decŏris.*

2 3. *juveni.* Who? Compare *juvenis* and *senex.*

2 4. *puppi.* What nouns have the abl. in *-i*?

2 5. *imo.* Give the pos. and comp., as well as the other form of the superl.

2 6. *fluens in veste.* Explain.

6 7. Decline in full the proper names: *Menoetes, Mnestheus, Gyas.*

4 8. Scan lines 172, 177, 178, 181.

4 9. When is *-a* final long, and when short?

Education Department, Ontario.

JULY EXAMINATIONS, 1883.

SECOND CLASS TEACHERS.

LATIN GRAMMAR AND COMPOSITION.

TIME—ONE HOUR AND A HALF.

Values.

I.

6 1. Decline *Deus* in full, giving all forms: also *vis*, *bos*.

11 2. Give the gen. pl., gender and meaning of *domus*, *fœdus*, *lis*, *nix*, *nux*, *flamen*, *comes*, *arundo*, *lepus*, *glis*, *supellex*.

14 3. Compare the adjectives *acer*, *facilis*, *bonus*, *multus*, *egregius*, *falsus*, *alacer*; also the adverbs corresponding to each of these adjectives.

5+3= 8 4. Give the cardinal, ordinal and distributive numerals from 1 to 5 inclusive; define the use of the distributives, giving examples.

12 5. Illustrate the following uses of the subjunctive mood by a sentence in each case: *(a)* condition; *(b)* purpose; *(c)* consequence; *(d)* desire.

II.

Translate into Latin:

5 *(a)* 1. He so harassed and ruined Sicily for the-space-of-three-years, that it cannot by any means be restored to its ancient condition.

10 2. What? If the father shall attempt to seize absolute-authority (*tyrannis*), and to betray his country, shall the son be-silent? Indeed (*immo vero*) he will beseech his father not to do so; if he [can[effect (*proficere*) nothing, he will accuse him.

4 3. It is the first care (*munus*) of justice, that no one should harm anyone [else].

10 4. "Nature has done ill (*rem male agere*)," said Theo-

[OVER.

phrastus, when dying, "in that (*quod*) she has given long life to stags and crows, [and] so short (*exiguus*) a life to men, whose lifetime (*ætas*) if it could be longer, the life of men would be furnished with all perfect arts and with all learning."

6 5. Give the same sentence in indirect narration, commencing:—"Theophrastus, when dying, is said to have accused nature, because, &c."

5 6. The age of Romulus fell in that period (*sæculum*, acc.), when Greece was already full of poets.

5 7. You have been able to perceive-clearly (*perspicere*) my opinion from that time, when you came to Cumae to-meet (*obviam*) me.

20 *(b)* To praise eloquence, and to express how great is its power, and what dignity it confers on those who have attained (*consequi*) it, is neither intended (*proponere*) by us in this place, nor [is it] necessary. But I would have asserted this without any hesitation, that, whether it is produced *(parĕre)* by art, or by practice, or by nature, it is the one most difficult thing of all. For of the five things of which it is said to consist, each of these is itself a great art by itself. Wherefore it can be imagined what power and what difficulty the combination (*concursus*) of five [of the] greatest arts has.

NOTE—Omit words in [ ]. Hyphens indicate that the words they connect are to be rendered by a single Latin word.

Education Department, Ontario.

JUNE EXAMINATION, 1883.

SECOND CLASS TEACHERS.

FRENCH.

TIME—TWO HOURS.

Values.

I.

GRAMMAR AND COMPOSITION.

8 1. Distinguish between *personne*, used as a noun and used as a pronoun. Give an example of each use.

12 2. Express in French:—*Has there not been? They will have gone away. Have I not flattered myself? That it might snow.*

10 3. Write down the 1st pers. sing. fut. ind. act. of the verbs *mourir*, *tenir*, *échoir*, *savoir*, *prévoir*.

4 4. What is the difference between *le second* and *le deuxième*?

6 5. In what cases is the preposition *à* expressed before personal pronouns which are indirect objects of a verbs?

8 6. When do *espérer* and *aimer mieux* take the preposition *de* after them?

7. Translate into French:—

6 (*a*) I shall not fail to do what you wish.
4 (*b*) Amuse yourself with reading.
4 (*c*) Heaven grant you may be happy!
6 (*d*) Happy changes have taken place.
4 (*e*) Most men think so.
6 (*f*) Neither the one nor the other will obtain the prize.
4 (*g*) Perhaps you are right.
6 (*h*) They alone deserve to be rewarded.
4 (*i*) We must be civil to everybody.
36 (*j*) The insurgents then put themselves in communication with England. In order to obtain help thence, they wished to seize upon one of the channel ports, and the

[OVER.

Values.

army of La Vendée, 44,000 strong, marched on Granville. Repulsed before this place, and driven in confusion to Maus, from want of artillery, it was almost destroyed in attempting to pass the Loire.

II.

ÉMILE DE BONNECHOSE: *Lazare Hoche.*

Translate:

45 Au premier bruit de la prise du fort, Puisaye comprit que tout était perdu. Il ne s'agissait plus de défendre la presqu'île ouverte au flot toujours grossissant des troupes républicaines, mais d'arrêter celles-ci assez longtemps pour permettre aux débris de l'armée royaliste de se rembarquer. Sombreuil et lui prirent à la hâte, dans ce but, au milieu d'une confusion épouvantable, d'urgentes et vaines dispositions. Toute l'artillerie était prise ou détruite; aucun retranchment n'était élevé dans l'intérieur de la presqu'île, encombrée par la foule des blessés et par une multitude de paysans, vieillards, femmes, enfants, courant tous en désespérés vers le rivage, rompant et entraînant avec eux les valeureux bataillons qui essayaient de se former et qui n'avaient que leur poitrine à opposer aux feux violents de la mousqueterie et des canons.

6 1. Give the principal parts of *comprit, détruite, courant.*

8 2. *Sombreuil et lui.* When is the pronoun "he" translated by *lui?*

2 3. *D'urgentes et vaines dispositions.* When is the partitive article expressed by *de* without the article (*le, la, les*)?

2 4. *Courant tous.* When does the pres. part. take the sign of the plural?

20 5. Translate, with brief explanatory notes—

(*a*) Qu'il (le peuple) batte son arriére-ban, et que son dernier effort soit le coup de grâce des tyrans.

(*b*) Monter les degrés de l'échafaud, c'est parfois gravir ceux du Panthéon.

20 6. Write brief notes on—

(*a*) Le coup d'état de fructidor.

(*b*) La journée du 13 vendémiaire.

Values.

(*c*) Les terroristes et les montagnards.

(*d*) Nous faisons de nos filles des coquettes étourdies ou des Agnès dont la timidité rebute.

Translate—

36 Trois Allemands industrieux, Guttemberg, Faust, et Schoeffer, établirent à Mayence la première imprimerie. Les premiers ouvrages sortis des presses de ces trois fondateurs de l'imprimerie, entre 1450 et 1465, sont devenus si rares, que ceux qui en possèdent des exemplaires les conservent comme des trésors. La Hollande réclame l'honneur de l'invention de l'imprimerie pour Laurent Coster, de Harlem; d'autres l'attribuent à Mentel, de Strasbourg; mais comme on ne connaît pas d'ouvrages de ces imprimeurs plus anciens que ceux des trois imprimeurs de Mayence, il faut laisser à cette ville la gloire d'avoir donné naissance à l'imprimerie. Quand on eut connaissance en France des grands avantages de la nouvelle invention, on songea à l'y introduire. En 1469, le prieur de la Sorbonne à Paris, fit venir trois ouvriers imprimeurs de Mayence, pour monter un atelier, et c'est dans la même maison de la Sorbonne que fut établie la première imprimerie qu'il y ait eu en France.

4 1. 1465. Express in words.

6 2. *En* 1469. Distinguish *en* from *dans*.

10 3. *C'est.* Distinguish from *il est*.

13 4. *Eut connaissance.* When is the def. article omitted before nouns in French?

Education Department, Ontario.

JULY EXAMINATIONS, 1883.

SECOND CLASS TEACHERS.

GERMAN.

TIME—TWO HOURS.

Values

I.

GRAMMAR AND COMPOSITION.

10 1. What classes of nouns are in the neuter gender? Name five exceptions.

15 2. Decline fully das Gebet, Sophie, and der ſterbende Greis.

8 3. When are zwei and drei declinable? Express in German: *by fours: half-past four.*

8 4. Decline der, die, das, when used for dieſer or jener, e, es.

6 5. Write out fully the impf. subj. act. of austrinken.

9 6. Name the prepositions which govern the dative and accusative.

8 7. When is the infinitive used without the preposition zu?

8. Translate into German:

5 (*a*) It is sad to have no friends.
5 (*b*) I come to speak to you.
5 (*c*) We have lived there for a long time.
5 (*d*) The more I drink, the thirstier I am.
6 (*e*) If I had been silent, I should have done better.
6 (*f*) He told me that he had been ill.
6 (*g*) Which of these houses do you wish to buy?
42 (*h*) A Frenchman rode up one day towards a bridge, which was so narrow that two horsemen could scarcely turn out for one another upon it. An Englishman entered the opposite end of it at the same time, and when both were in the middle, neither of them would give place to the other. "An Englishman turns out of the way for no Frenchman," said the Briton. The Frenchman replied, "My horse is also an Englishman."

[OVER.

Values

II.

Adler's Reader and Schiller.

32 Translate:

Der Graf war zärtlich, ſanft und fromm, aber kränklich und zu weich. Die Gruft ſeiner Gemahlinn ſtand gleichſam unter dem Fußboden ſeines Lebens und unterhöhlte jedes Beet, wo er Blumen ſuchte — Jeßt wurd' er an ſeinem Geburtstage und vielleicht durch dieſen krank, ſo wenig ertrug die gelähmte Bruſt einen Tag, wo das Herz ſtärker an ſie ſchlug. Da er von Ohnmacht in Ohnmacht ſank, ſo ging der gequälte Sohn in das engliſche Wäldchen, worin das Grabmal ſeiner Mutter und das leere war, das ſein Vater ſich in der Leichenklage hatte bauen laſſen; und hier gelobte Heinrich dem mütterlichen Geiſte den Krieg mit ſeinem Jähzorn und mit ſeinem Heißhunger nach Freuden an. Der Geburtstag des Vaters rief ihm ja zu: „Die dünne Erde, die deinen Vater hält und ihn vom Staube deiner Mutter abſondert, wird bald einbrechen, vielleicht in wenig Tagen, und dann ſtirbt er bekümmert und ohne Hoffnung, und er kommt zu deiner Mutter und kann ihr nicht ſagen, daß du beſſer biſt."

12 1. Give the principal parts of the verbs ertrug, ſchlug, ging, laſſen, rief, hält.

6 2. Compare ſanft, fromm, ſtärker.

4 3. Unterhöhlte. Accentuate. What is its past participle?

2 4. In wenig Tagen. Parse Tagen.

Translate:

40 Aber Einwürfe, welche er ſich ſelbſt ſchon gemacht und auch ſchon beantwortet hatte, konnten den Herzog von Parma in ſeinem Vorſaß nicht wankend machen. Nicht aus Unwiſſenheit der damit verknupften Gefahren, noch aus leichtſinniger Ueberſchätzung ſeiner Kräfte hatte er den kühnen Anſchlag gefaßt Jener genialiſche Inſtinkt, der den großen Menſchen auf Bahnen, die der kleine entweder nicht betritt, oder nicht endigt, mit glücklicher Sicherheit leitet, erhob ihn über alle Zweifel, die eine kalte, eher eingeſchränkte Klugheit ihm entgegenſtellte, und ohne ſeine Generale überzeugen zu können, erkannte er die Wahrheit ſeiner Berechnung in einem dunkeln, aber darum nicht weniger ſichern Gefühl.

8 1. Parse Unwiſſenheit, betritt, erhob, ohne.

6 2. Bahnen. Parse and decline fully.

4 3. Menſchen. Distinguish Mann and Menſch.

12 4. Draw a map, showing the positions of the Schelde, Antwerp, Lillo, Seeland, Brussels, Bevern.

8 5. Give a short account of Gianibelli.

Values

22 Translate:

„Denn unter mir lag's noch bergetief
In purpurner Finſterniß da,
Und ob's hier dem Ohre gleich ewig ſchlief,
Das Auge mit Schaudern hinunter ſah,
Wie's von Salamandern und Molchen und Drachen
Sich regt' in dem furchtbaren Höllenrachen."

„Schwarz wimmelten da, in grauſem Gemiſch,
Zu ſcheußlichen Klumpen geballt,
Der ſtachlichte Roche, der Klippenfiſch,
Des Hammers gräuliche Ungeſtalt,
Und dräuend wies mir die grimmigen Zähne
Der entſetzliche Hai, des Meeres Hyäne."

Education Department, Ontario.

JULY EXAMINATIONS, 1883.

THIRD AND SECOND CLASS TEACHERS.

MENTAL ARITHMETIC.

TIME—THIRTY MINUTES.

Values.

16 1. A hall-way is 90 inches wide, and takes 25 sq. yds. of oil-cloth to cover it How long is it?

16 2. A gentleman travels from Toronto to Montreal and back. He goes at an average rate of 33 miles per hour and returns at an average of 30 miles per hour, and he finds that he occupied one hour longer in returning than in going. Find the distance from Toronto to Montreal.

17 3. *A* can do a piece of work in 7 days, and *B* can do it in 8 days. *A* works at it for $2\frac{1}{2}$ days, and *B* works at it for 3 days. *C* then finishes it in $3\frac{3}{4}$ days. In how many days could *C* have done the whole work alone?

17 4. By selling an article for $21 I would *lose* $12\frac{1}{2}$ %. At what should I sell it in order to *gain* $12\frac{1}{2}$ %?

17 5. A merchant marked his goods at an advance of 60 % on cost. He gave one of his customers a discount of 15 % off the marked price. What was his gain on $6.80 received from that customer?

17 6. How much stock must I sell out of the $3\frac{1}{2}$ per cents., at 84, to enable me to buy $7,700 4 per cent. stock, the value of the stocks being proportional to the dividends they pay?

Education Department, Ontario.

JULY EXAMINATIONS, 1883

INTERMEDIATE, THIRD AND SECOND CLASSES.

DRAWING.

TIME—ONE HOUR.

Graphic illustrations are recommended wherever they can be employed.

Question 6 will be counted, if answered, but it is not required to make a complete paper.

Values.

3×4=12 1. Draw three isosceles triangles, one having its base horizontal, one having it vertical, and a third having it oblique.

4×5=20 2. Show how to draw, by means of compasses and straight-edge, (*a*) a square, (*b*) a regular hexagon, (*c*) a regular octagon, (*d*) a system of regular hexagons like the section of a honey-comb.

22 3. Draw a rectangle about two-thirds as wide as long, and surround it by an ornamental border of your own design.

(The marks must be allotted for neatness and for taste displayed in the design).

4×6=24 4. How are the following systems of lines to be represented in a perspective drawing?

(*a*) The seams of a floor to a person standing at a side of the room to or from which the seams run;

(*b*) the same to a person standing at a side of the room parallel to which the seams run;

(*c*) the same to a person standing at the corner of the room;

(*d*) the courses of brick in a house, one corner of which is directed towards you.

22 5. Draw in perspective an upright circular cylinder standing upon a cubical block as a plinth, and supporting a sphere upon its top. The top of the cylinder to be shown.

(The marks must be allotted for neatness and truthfulness of representation).

[OVER.

Values.

15 6. (*Optional.*) What is meant by foreshortening? by aërial perspective?

If a picture were such as to fairly represent an English landscape, in what respect would it fail to properly represent an Ontario landscape?

Education Department, Ontario.

JULY EXAMINATIONS, 1883.

INTERMEDIATE, THIRD AND SECOND CLASSES.

BOTANY.

TIME—ONE HOUR.

Values.

8 1. Describe briefly a vegetable cell in regard to its form, size, contents, &c.

6 What differences usually exist between cells found in pith and those found in wood?

5 2. Name two kinds of underground stems.

7 How do we know that they are not roots?

6 State any uses of these stems (*a*) to the plant, (*b*) to man.

8 3. What are the functions of the leaf in plant life?

6 State any differences between leaves which are surrounded by air and leaves which float upon water.

6 Give any laws according to which leaves are arranged upon the stem.

8 4. Give the names and relative positions of the parts of a complete flower.

4 Can you name a flower which is *perfect* but not *complete?*

14 5. When a pea is soaked in water it splits into two parts, united by a small ligament, but a grain of corn does not. Explain the meaning of this difference.

10 6. Is an apple a Botanical fruit? If not, what is it?

12 7. Name any plants belonging to the following natural orders:—

Cruciferæ, Carophyllaceæ, Compositæ, Labiatæ.

Education Department, Ontario.

JUNE EXAMINATION, 1883.

INTERMEDIATE AND THIRD CLASS.

ENGLISH GRAMMAR.

TIME—TWO HOURS.

Values

1. Perplex'd and troubled at his bad success
The tempter stood, nor had *what* to reply,
Discover'd in his fraud, thrown from his hope
So oft, and the persuasive rhetoric
That sleek'd his tongue, and won so much on Eve,
So little here, nay, lost; but Eve was Eve:
This for his overmatch, *who*, self-deceived
And rash, beforehand had no better weigh'd
The strength he was to cope with, or his own.
—MILTON, *Paradise Regained.*

19 (a) Analyze the first five lines.

12 (b) Parse the words in italics.

14 (c) Complete the following elliptical clauses:—"and the persuasive——lost." "This——his own."

2. Correct any errors in the following sentences, giving your reasons in each case:—

2 (i.) These facts were developed in the examination of a boy, whom it was alleged was an accomplice.

2 (ii.) I have been troubled 12 years with a white swelling on my right foot, and getting worse every year, and very painful, and breaking out in hot weather.

4 (iii.) A species of wild potatoes have been discovered on the table lands of South-Western Arizona, in altitudes of 8,000 to 12,000 feet, which is spoken of as superior in taste and flavour to the best cultivated potatoes.

4 (iv.) This semi-tropical land has many fascinating scenes, and there are enough seductive pleasures near by to induce one with anything like lethargic natural tendencies to be satisfied with the entrancing views presented of the coral reefs from the island on a calm day at low tide, without exciting one's-self to

[OVER.

Values.

take a trip to them; but once this is overcome, and the beauty of the coral, as it lies in its native beds, is realized, the result more than compensates for the pain.

4 (v.) A coroner's jury has returned a verdict of manslaughter against a constable. The victim was a young man who, it is alleged, he frightened to death by riding him down when under the influence of liquor.

2 (vi.) The early robin was too previous this spring.

4 (vii.) "March 21, spring commences." Any one whose red, weak, and flabby ear is still a source of pain discrediting this statement will please consult their almanac.

6 (viii.) Influenza with March has greatly risen, it having been last week over 10 per cent., while this week it attains 14.1 per cent. in degree of prevalence. What at first sight causes this to appear rather remarkable are the facts of the weather being of a generally uniform character, and having a small diurnal range; but we have a counter fact in the considerably larger amount of clouded sky than in several preceding weeks.

2 (ix.) Somebody spent Saturday night in the office, making themselves comfortable.

4 (x.) A youthful band of sneak thieves, which have given tradesmen considerable trouble, have been broken up.

2 (xi.) A member of the House has received a letter stating that it is the intention of the Invincibles to dynamite Parliament after Easter.

4 (xii.) The land is altogether too heavy to be easy worked, and the land further west, where it is some lighter, will give much better results.

2 (xiii.) This will be welcome news to horse-dealers and others, who will likely be further informed as to the regulations.

2 (xiv.) We will have ice for three or four weeks yet in the bay.

2 (xv.) I always had to lay down during the day, and this almost every hour.

2 (xvi.) Neither the diocese of Winchester nor the social life of London were sufficient for his spirit.

10 3. Distinguish between *censer* and *censor*; *incense* and

Values.	
	incènse; mien and *mean; mead* and *meed; strait* and *straight.*
5	4. Spell phonetically—*thyme, engine, route, boatswain, genuine.*
14+7 =21	5. Give the derivation and meaning of each of the following words:—benignant, bankrupt, fabric, victim, reptile, misanthropy, meridian, sophistry, prototype, alleviate, ominous, resignation, peculiar, apathy.
36	6. Give five derivatives of each of the following Latin roots:—*sedes, manus, fluo, patior, struo, moveo;* and two from each of the Greek words: *philos, grapho, strepho.*
5+10 =15	7. Define the use of the following prefixes, and give two words containing each: *per, pre, pro, ante, anti.*

Education Department, Ontario.

JULY EXAMINATIONS, 1883.

INTERMEDIATE AND THIRD CLASS.

ENGLISH LITERATURE.

TIME—TWO HOURS.

⁂ The value in the margin, opposite each question, under the heading M., is for the matter of the answer; the additional value, under F., is for its literary form.

Values.

M. F.

I.—BURKE.

We *spurn* from us with *disgust* and indignation the slanders of those who bring us their anecdotes with the *attestation* of the flower-de-luce on their shoulders. We have Lord George Gordon fast in Newgate; and neither his being a public proselyte to Judaism, nor his having, in his zeal against catholic *priests* and all sorts of ecclesiastics, raised a mob (excuse the term, it is still in use here) which pulled down all our *prisons*, have preserved to him a liberty, of which he did not render himself worthy by a virtuous use of it. We have rebuilt Newgate, and *tenanted* the *mansion*. We have prisons almost as strong as the Bastile, for those who dare to *libel* the queens of France. In this spiritual *retreat*, let the noble libeller remain.

9 (*a*) Give the etymology of the words in italics.

8 (*b*) Write explanatory notes on *flower-de-luce, Lord George Gordon, Newgate, Bastile.*

6 (*c*) Enumerate the words of Greek origin in the extract.

2 (*d*) Specify any violation of grammatical rules contained in the extract.

6 3 2. Sketch briefly the part taken by Burke in public affairs; and give some account of his principal political friends and opponents.

NOTE—*Candidates are allowed an option between Scott's "Marmion" and Goldsmith's "Traveller."*

[OVER.

Values.
M. F.

II.—Scott's Marmion.

1. I said, *Tantallon's* dizzy steep
Hung o'er the margin of the deep.
Many a rude tower and rampart there
Repelled *the insult of the air*,
Which, when the tempest vexed the sky,
Half breeze, half spray, came whistling by.
Above the rest, a turret square
Did o'er its *Gothic* entrance bear,
Of sculpture rude, a stony shield;
The *Bloody Heart* was in the field,
And *in the chief* three *mullets* stood,
The *cognizance* of Douglas blood.
The turret held a narrow stair,
Which, mounted, gave you access where
A parapet's embattled row
Did seaward round the castle go.

—*Canto VI.*

14 4 (*a*) Write explanatory notes on the words in italics.

6 (*b*) Parse: *half spray* (6), *cognizance*, *Douglas* (12), *mounted*, *where* (14).

7 (*c*) Give the full etymology of: *repel*, *turret*, *entrance*, *chief*, *cognizance*, *access*, *parapet*.

2. Write explanatory notes on the words in italics in the following passages, and state in what connection they occur:

3 (i.) "Imprinted at the antique dome
Of *Caxton* or *D. Worde*."

5 (ii.) In painted *tabards*, proudly showing
Gules, *Argent*, *Or* and *Azure* glowing.

5 (iii.) "*A word of vulgar augury*,
That broke from me, I scarce knew why,
Brought on *a village tale*"

3. "In the lost battle, borne down by the flying,
Where mingles war's rattle with groans of the dying."

4 2 Explain the reference contained in these lines, and state where they occur.

10 4. Quote the 34th stanza of Canto VI, descriptive of the last stand made by the Scottish army, from "But as they left the darkening heath" to "wounded king."

4 2 5. Give a brief outline of Scott's life, mentioning his chief poems.

Values.

M. F.

III.—GOLDSMITH'S TRAVELLER.

1. Nature, a mother kind alike to all,
Still grants her bliss at labour's earnest call:
With food as well the peasant is supplied
On Idria's cliffs as Arno's shelvy side;
And, though the rocky-crested summits frown,
These rocks, by custom, turn to beds of down.
From art, more various are the blessings sent—
Wealth, commerce, honour, liberty, content;
Yet these each other's power so strong contest,
That either seems destructive of the rest:
Where wealth and freedom reign, contentment fails,
And honour sinks where commerce long prevails.

8 4 (*a*) Write out the meaning of this passage in your own language.

8 (*b*) Derive: *peasant, summit, custom, wealth, commerce, power, reign, prevail.*

4 (*c*) Write notes on: *Idria's cliffs, Arno's shelvy side.*

2 (*d*) Supply the ellipsis in line 4.

4 (*e*) Parse: *strong* (9), *rest* (10).

2. Write explanatory notes on the following passages, and state in what connection each occurs:—

4 (i.) Ye bending swains, that dress the flowery vale.

(ii.) The pregnant quarry teem'd with human form.

4 (iii.) The pasteboard triumph and the cavalcade.

4 (iv.) How often have I led the sportive choir,
With tuneless pipe beside the murmuring Loire.

6 (v.) Where lawns extend that scorn Arcadian pride,
And brighter streams than famed Hydaspes glide.

14 3 Quote Goldsmith's description of the Swiss peasant, from "Cheerful at noon" to "the nightly bed."

Education Department, Ontario.

JULY EXAMINATIONS, 1883.

INTERMEDIATE AND THIRD CLASS.

DICTATION.

TIME—THIRTY MINUTES.

Note for the Presiding Examiner—This paper is not to be seen by the candidates. It is to be read to them *three times*—*first*, at the ordinary rate of reading, they simply paying attention, to catch the drift of the passage; *second*, slowly, the candidates writing; *third*, for review.

VALUE—22.

A dismal wintry storm was howling through the tree-tops; and the smothering snow, falling rapidly, obliterated all traces of a path, and rendered it impossible to drag through the drifts the ponderous artillery. Both parties in the dark, tempestuous night became entangled in the forest, and the heads of the columns met in various places. An awful scene of confusion, conflict, and carnage then ensued. Imagination can hardly compass the horror of that spectacle. The dark midnight, the howlings of the wintry storm, the driving sheets of snow, the incessant roar of artillery and of musketry from a hundred and thirty thousand combatants, the lightning flashes of the guns, the crash of the falling trees as the heavy cannon-balls swept through the forest, the floundering of innumerable horsemen bewildered in the pathless snow, the shriek of death—all combined to present a scene the like of which this world has probably seldom presented. At times hostile divisions became intermingled in inextricable confusion; and, bayonet crossing bayonet, they fought with the ferocity of demons. As the advancing and retreating hosts wavered to and fro, the wounded, by thousands, were left to perish in dark ravines, with the drifting snow crimsoned with blood for their only covering! This terrific combat was witnessed by the poet Campbell from the summit of the tower of a neighbouring monastery, and has been immortalized in his noble verses, which are familiar, wherever the English language is known.

Education Department, Ontario

JULY EXAMINATIONS, 1883.

INTERMEDIATE AND THIRD CLASS.

ARITHMETIC.

TIME—ONE HOUR AND A HALF.

(Eighty per cent. of this paper will be considered a maximum.)

Values.

5 1. Add together $\frac{3}{7}$ of £13, $\frac{1}{3}$ of $\frac{1}{2\frac{4}{5}}$ of $\frac{3}{5}$ of £2 12*s*., and $\frac{5}{7}$ of 9*d*.

5 Reduce 13*s*. $4\frac{1}{2}$*d*. to the decimal of 19*s*. 6*d*.

6 2. Find by Practice the value of 8596 lbs. at £10 18*s*. $7\frac{1}{2}$*d*. each.

8 3. A person borrows $500 on April 10th, and on June 22nd pays his debt with $510.20. At what rate per cent. per annum was he charged interest?

10 4. A man having a certain sum of money to invest has an opportunity of purchasing 7 per cent. stock at 95, but delays until it has risen to 110. What per cent. is his income less than if he had purchased at the first price?

10 5. At an international exhibition one country was awarded 5 gold, 9 silver and 11 bronze medals; and another 4 gold, 15 silver and 10 bronze. Find a ratio of values for such medals that these countries may be regarded as equally fortunate.

10 6. In a box there is a certain number of sovereigns, three times as many guineas, and twice as many marks *(13s. 4d.)* as guineas. The entire amount in the box is £815. How many coins of each kind are there?

12 7. Find when first after 2 o'clock the hour and minute hands of a clock make an angle of 60 degrees with each other.

12 8. For each of three succeeding months the population of a North-west town rose 50 per cent.; and at the end of the third month was 2,700. What was the population at the beginning of the time?

[OVER.

Values.

10 9. Leap year is omitted once in every century, except those centuries whose number is divisible by 4. What is the average length of a year?

12 10. A cube is formed of a certain number of pounds avoirdupois of a substance, and the same number of pounds Troy of the same substance. What proportion will a side of the cube bear to a side of a cube formed of the same number of pounds as before, but all avoirdupois? (175 lbs. Troy = 144 lbs. avoirdupois.)

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JULY EXAMINATIONS, 1883.

INTERMEDIATE AND THIRD CLASS.

ALGEBRA.

TIME—TWO HOURS.

(Eighty per cent. of this paper will be considered a maximum.)

Values.

1. Divide

6 (1). $(a-b)c^3+(b-c)a^3+(c-a)b^3$ by $(a-b)(b-c)(c-a)$.

4 (2). $\dfrac{x^2+y^2}{x^3y^2}-\dfrac{x^2+y^2}{x^2y^3}$ by $\dfrac{1}{x}-\dfrac{1}{y}$.

6 2. What must be the values of a, b and c that x^3+ax^2+bx+c may have $x-1$, $x-2$ and $x-3$, all as factors?

3. Find the H.C.F. of

5 (1). $3x^4-4x^3+1$ and $4x^4-5x^3-x^2+x+1$.

7 (2). $8x^3-y^3+27z^3+18xyz$ and $4x^2+12xz+9z^2-y^2$.

4. Simplify

5 (1).
$$\left(\frac{4x^2}{y^2}-1\right)\left(\frac{2x}{2x-y}-1\right)+\left(\frac{8x^3}{y^3}-1\right)\left(\frac{4x^2+2xy}{4x^2+2xy+y^2}-1\right).$$

6 (2).
$$\frac{x^3+(a+b)x^2+(ab+1)x+b}{bx^3+(ab+1)x^2+(a+b)x+1}.$$

5. Find a value of x that will make $\dfrac{ac+bd+ad+bc}{x-3c+2d}$ independent of c and d.

6 6. (1.) If $a+b+c=0$, then
$$\frac{1}{a^2}+\frac{1}{b^2}+\frac{1}{c^2}=\left\{\frac{1}{a}+\frac{1}{b}+\frac{1}{c}\right\}^2.$$

7 (2.) If $x=a^2+b^2+c^2$ and $y=ab+bc+ca$, then
$$x^3+2y^3-3xy^2=(a^3+b^3+c^3-3abc)^2.$$

5 (3.) If $2a=y+z$, $2b=z+x$, $2c=x+y$, express $(a+b+c)^3-2(a+b+c)(a^2+b^2+c^2)$ in terms of x, y and z.

[OVER.

Values.

6 7. Find a value of a which will make the quantities $\frac{(a+b)(a+c)}{a+b+c}$ and $\frac{(a+c)(a+d)}{a+c+d}$ equal to one another.

8. Solve the equations—

6 (1.) $\sqrt{x+3}+\sqrt{x+2}=5.$

5 (2.) $\frac{5-x}{3}+\frac{5-2x}{4}+\frac{x+1}{3}-\frac{2+5x}{2}=0.$

5 (3.) $(x+a+b)(c+d)=(x+c+d)(a+b)$, where $c+d$ is not equal to $a+b$.

7 9. One side of a right angled triangle exceeds the other by 3 ft., neither being the hypothenuse, and its area is 18 sq. feet. What are the sides?

8 10. A cistern with vertical sides is h feet deep. Water is carried away from it by one pipe $\frac{5}{6}$ as fast as it is supplied by another. Find at what point in the side the former pipe must be inserted that the cistern may fill in twice the time it would did water not flow from it at all.

Education Department, Ontario.

JULY EXAMINATIONS, 1883.

INTERMEDIATE AND THIRD CLASS.

EUCLID.

TIME—TWO HOURS.

Algebraical proofs will be allowed for 6, 7 *and* 8.

Values.

8 1. State the differences between a square, an oblong, a rhombus and a rhomboid.

2 What name employed in Euclid will apply to all of
2 them? What to the first two only?

14 2. Upon the same base, and upon the same side of it, there cannot be two triangles having their sides terminated in one extremity of the base equal to one another, and also those terminated in the other extremity.

12 3. Equal triangles upon the same base and upon the same side of it are between the same parallels.

12 4. To find a point within a triangle such that if lines be drawn from it to the angular points the three triangles thus formed shall be equal.

12 5. The straight line drawn through the points of bisection of two sides of a triangle is parallel to the third side.

14 6. If a straight line be divided equally and also unequally, the rectangle contained by the unequal parts is less than the square upon one of the equal parts, by the square upon the line between the points of division.

12 7. Show that the proposition of question 6 includes the following, viz.:—The rectangle under the sum and difference of two lines is equal to the difference of the squares upon the lines.

12 8. Of all rectangles with the same perimeter the square has the greatest area.

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JULY EXAMINATIONS, 1883

INTERMEDIATE AND THIRD CLASS.

HISTORY.

TIME—TWO HOURS.

Values.	
15	1. Show how the internal condition of Rome and Carthage respectively led to the final triumph of the former.
15	2. Sketch the political condition of Rome at the death of Sulla.
5	3. Why did not the Danish invaders of England leave more marked traces of their presence?
15	4. Sketch the political, social and intellectual condition of England under Edward III.
15	5. Give a brief account of the relations subsisting between England and Scotland, under the first three Edwards.
15	6. Give an outline of the part borne by England in European politics during the reign of Anne.
10	7. Sketch briefly the history of Canada under the French Régime, from the arrival of Champlain.
10	8. Give some account of the troubles of 1837 in Upper Canada.

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JULY EXAMINATIONS, 1883.

INTERMEDIATE AND THIRD CLASS

GEOGRAPHY.

TIME—ONE HOUR AND A HALF.

Values.	
8	1. Define Isthmus, Delta, Ecliptic, Plateau, Isothermal lines.
12	2. Draw a globe shewing the equator, tropics, meridians, and polar circles.
20	3. In going by rail from Toronto to Ottawa, name, in order, the towns or cities passed through, giving the county in which each is situated, with its chief manufactures or exports.
15	4. Trace the course of a vessel sailing from Montreal to St. Petersburg, giving, in order, the waters through which it would sail, and the countries near which it would pass.
15	5. Name the principal rivers of Africa, stating the directions in which they flow and the waters into which they empty.
30	6. Draw an outline map of the United States, shewing the mountain chains, marking the course of the chief rivers, and locating ten of the largest cities.

Education Department, Ontario.

JULY EXAMINATIONS, 1883.

INTERMEDIATE AND THIRD CLASS.

NATURAL PHILOSOPHY.

TIME—TWO HOURS.

Values.

10 1. How are forces measured? What is the unit of force commonly adopted in statics? What general relation is there between the latitude of any place and the magnitude of the statical unit of force for that place?

10 2. What is meant by saying that two or more given forces exactly balance each other?

If a body moving with constant velocity in a straight line be brought under the action of two forces which exactly balance each other, what will be the result with regard to the motion of the body?

20 3. Explain how a force may be *completely* represented by a straight line.

Draw a diagram to represent the frame and the forces acting thereon in the following.—A square frame ABCD, whose sides are each 3 ft. long, is under the action of four forces; 1st, a force of 3 lbs. acting at A, and from A towards C; 2nd, a force of 3 lbs acting at B, in the direction from D to B; 3rd, a force of 6 lbs. acting at C, and from C towards D; 4th, a force of 5 lbs. acting at D, in a line parallel to CA and in the direction from C to A.

15 4. State the parallelogram of forces.

Two forces of 10 units each act in lines which meet in a point, and the angle between their directions is 120°. Show that they may be balanced by two forces of 5 units each, and determine the directions in which these must act.

15 5. State the principle of the lever.

Two boys playing at see-saw find they balance each other standing on the ends of a uniform plank laid across a log, when the arms of their see-saw are 7 ft. and 8 ft. respectively. Find the weight of the plank, the weights of the boys being 75 lbs. and 90 lbs. respectively.

[OVER.

Values.

15 6. What is meant by the specific gravity of a body?

A cubic foot of anthracite coal which weighs 100 lbs. in the air is found to weigh only 45 lbs. 2 oz. in a certain specimen of petroleum. Find the specific gravity of the petroleum, assuming that a cubic foot of water weighs 1,000 oz.

15 7. Describe the common mercury barometer and state the principles of its action.

Find the greatest height to which water will *rise* in a common suction pump when the mercury in the barometer stands at 30 inches, the specific gravity of mercury being 13·6.

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JULY EXAMINATION, 1883.

INTERMEDIATE AND THIRD CLASS.

CHEMISTRY.

Time—One Hour and a Half.

Values.	
6	1. State the law of multiple proportions, and explain your statement by examples.
22	2. Give the atomic weights ($H=1$,) of oxygen, nitrogen, carbon, chlorine, sulphur and phosphorous; and calculate the molecular weights of ammonia, light carburetted hydrogen, sulphuretted hydrogen, nitrous oxide, carbon dioxide, phosphorous pentoxide, nitric acid and sulphuric acid.
10	3. Describe a process of preparation and the chief properties of hydrogen.
18	4. What are the chief properties of oxygen? Give the equations for four processes for the preparation of oxygen, and describe one of these processes.
18	5. Describe the preparation and properties of carbon dioxide. What are the chief properties of a solution of carbon dioxide in water?
10	6. Describe the product of combustion of sulphur in air. In what respect does its bleaching power differ from that of chlorine?
16	7. Express by symbols the reactions which occur when sulphuric acid is heated together with *(a)* common salt, *(b)* sal ammoniac, *(c)* nitre, *(d)* copper.

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JULY EXAMINATIONS, 1883.

INTERMEDIATE AND THIRD CLASS.

MUSIC.

TIME—ONE HOUR.

1. Write the scales of D major, and F major. 20

2. Explain the following signs:— 15

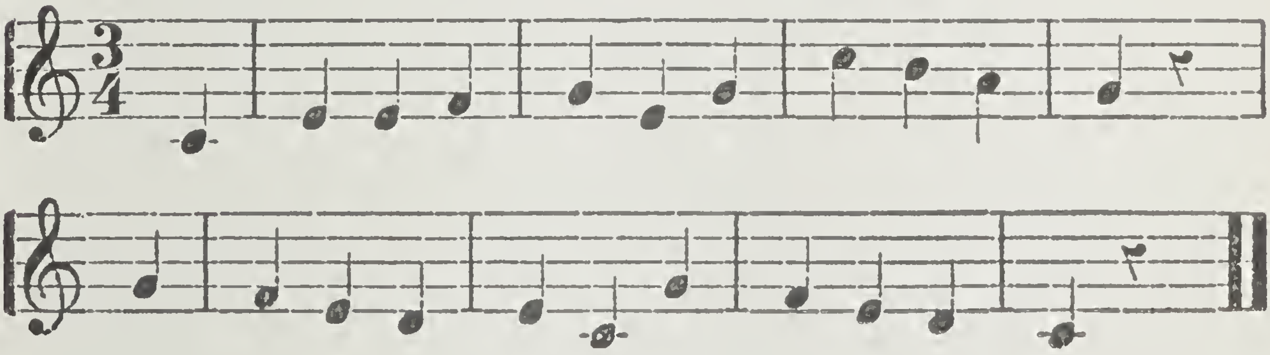
♮ ♭ ♯

3. What is a key signature? 10

4. What is a time signature? 10

5. Write four measures in common time containing examples of whole, half, quarter, eighth, sixteenth notes, and equivalent rests. 20

6. Transpose the following melody to the key of E:— 25



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JUNE EXAMINATION, 1883.

INTERMEDIATE AND THIRD CLASS TEACHERS.

COMPOSITION.

TIME—ONE HOUR AND A HALF.

I.

Value—25.

Write out in prose, in your own language, the substance of the following poem :—

Slowly thy flowing tide
Came in, old Avon! scarcely did mine eyes,
As watchfully I roam'd thy green-wood side,
Perceive its gentle rise.

With many a stroke and strong
The labouring boatmen upward plied their oars,
Yet little way they made, though labouring long
Between thy winding shores.

Now down thine ebbing tide
The unlabour'd boat falls rapidly along;
The solitary helm's-man sits to guide,
And sings an idle song.

Now o'er the rocks that lay
So silent late, the shallow current roars;
Fast flow thy waters on their seaward way
Through wider-spreading shores.

Avon! I gaze and know
The lesson emblem'd in thy varying way;
It speaks of human joys that rise so slow,
So rapidly decay.

II.

Value—50.

(a) Sketch the character and career of your favourite character in history, giving reasons for your preference; or,

(b) Write a composition on one of the following subjects :—

(i.) Winter and Summer pleasures;
(ii.) The relative advantages of solitude and society;
(iii.) Liberty.

N.B.—The Candidate must write a composition, *besides* the paraphrase of the poem given above.

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JULY EXAMINATIONS, 1883.

INTERMEDIATE AND THIRD CLASS.

LATIN GRAMMAR AND COMPOSITION.

TIME—ONE HOUR AND A HALF.

Values.

I.

6 1. Decline *Deus* in full, giving all forms; also *vis*, *bos*.

9 2. Give the gen. sing. of *Jupiter*, *Venus*, *domus*, *fœdus*, *nemus*, *supellex*, *lis*, *glis*, *nix*.

14 3. Give the gender and meaning of *nux*, *comes*, *ordo*, *arundo*, *lepus*, *flamen*, *bos*.

10 4. Compare the adjectives *acer*, *facilis*, *bonus*, *multus*, *egregius*; also the adverb corresponding to each of these adjectives.

8 5. Decline *duo*, and give the Latin numerals from 4 to 9 inclusive; also the Latin for 20, 70, 90, 200, 700, 900.

6 6. Distinguish between *hic*, *ille*, *is* and *iste*; also between *quis* and *qui*.

6 7. Define the use of the dative case, illustrating by examples.

II.

Translate into Latin:

3 (*a*) 1. We know that the sun is much greater than the earth.

5 2. The Senate decreed that the ambassadors of Jugurtha should depart from Italy within the next ten days.

3 3 Pythagoras came into Italy in the reign of Tarquinius Superbus (abl. abs.).

3 4. Hannibal was the first who crossed the Alps with an army.

5 5. Divitiacus besought Cæsar, not to resolve-on (*statuere*) anything too-severe (*gravius*) against his brother.

[OVER.

Values.	
5	6. Diogenes was accustomed to argue (*disputare*), how much he surpassed (*superare*) the king in life and fortune.
5	7. Pylades said that he was Orestes, in order that he might be slain for him.
5	8. Temperance calms (*sedare*) the appetites (*appetitio*) and causes (*efficere*) them to submit (*parere*) to right reason.
6	9. Epaminondas, having conquered the Lacedæmonians at (*apud*) Mantinea, and seeing himself to be dying (*exanimari*), asked whether his shield (*clipeus*) were safe (*salvus*).
17	(*b*) Cyrus, in (*apud*) [a work of] Xenophon, in that speech which he delivered [while] dying, when he was now [an] old-man, says that he has never felt that his old age had become feebler (*imbecillus*) than his youth had been. I remember [when I was] a boy that L. Metellus, who, having been made Pontifex Maximus four-years after his second consulate, filled (*praesum*) that priesthood for twenty-two years, was [possessed] of such good powers in the last period of his life (*ætas*), that he did not feel-the-want-of (*requirere*) youth. There is no necessity for me to say anything about myself, although that is certainly the privilege-of-old-age (*senilis*), and is permitted to our time-of-life.

NOTE—Omit words in [ ]. Hyphens indicate that the words they connect are to be rendered by a single Latin word.

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JULY EXAMINATION, 1883.

INTERMEDIATE AND THIRD CLASS.

LATIN AUTHORS.

TIME—ONE HOUR AND A HALF

Values.

I.

Translate:

20 Ipsi philosophi etiam illis libellis quos de *contemnenda* gloria *scribunt* nomen suum inscribunt: in eo ipso, in quo prædicationem nobilitatemque *despiciunt* prædicari de se ac se nominari *volunt*. Decimus quidem Brutus, summus ille vir et imperator, Attii amicissimi sui carminibus templorum ac monumentorum aditus exornavit suorum. Jam vero ille qui cum Ætolis Ennio *comite* bellavit Fulvius non dubitavit Martis manubias Musis consecrare.—CICERO, *pro Archia*.

9 1. Parse the words in italics, conjugating the verbs.

10 2. Write notes on the proper names, ending with Fulvius

3 3. Mark the quantity of the penult in: *philosophi*, *inscribunt*, *imperator*, *amicus*, *aditus*, *Ætolis*.

4 4. *eo ipso*. Give the gen. and dat. sing., and the neut. sing. nom., of both these pronouns.

2 5. *summus*. Give the other form of the superlative of this adj., distinguishing between the two forms.

4 6. *manubias*. Mention four other substantives used in the plural only.

I.

Translate:

25 Ipse, etsi res erat multae operae ac *laboris*, tamen commodissimum esse statuit omnes naves *subduci* et cum

[OVER.

castris una munitione conjungi. In his rebus *circiter* dies decem *consumit* ne nocturnis quidem temporibus ad laborem militum intermissis. Subductus navibus castrisque egregie *munitis* easdem copias, quas ante, praesidio navibus reliquit, ipse eodem, unde *redierat*, proficiscitur. Eo cum venisset, majores jam undique in eum locum copiae Britannorum *convenerant* summa imperii bellique administrandi communi consilio permissa Cassivellauno; cujus fines a *maritimis* civitatibus flumen *dividit*, quod appellatur *Tamesis*, a mari circiter millia passuum octoginta.—CÆSAR, *Bellum Britann.*

7 1. Mark the quantity of the penult of all the words in italics; and distinguish between *relĭqui* and *relīqui*, *convĕnit* and *convēnit*.

18 2. Parse: *conjungi*, *consumit*, *intermissis*, *reliquit*, *eodem*, *redierat*, *proficiscitur*, *venisset*, *summa*, *dividit*, conjugating the verbs.

1 3. *multae operae*. How is the gen. here used?

1 4. *subduci*. On what does this verb depend?

1 5. *ad laborem*. What does the prepos. here express?

1 6. *quas ante*. Complete the sentence.

2 7. *praesidio navibus*. What construction is used here, and when is it employed?

2 8. *redierat—venisset*. Account for the mood in both cases.

4 9. *quod appellatur*. Why is the pron. neuter? Give the rule; also the gen. and dat. sing.

III.

Translate:

30 Tum vero *exarsit juveni* dolor *ossibus* ingens,
Nec *lacrimis caruere* genae; segnemque Menoeten,
Oblitus decorisque sui, *sociumque salutis*,
In mare *praecipitem* puppi deturbat ab alta: 175
Ipse gubernaclo rector *subit*, ipse magister;
Hortaturque viros, clavumque ad litora *torquet*.

Values.

At gravis ut fundo vix tandem *redditus* imo est
Jam senior madidaque fluens in veste Menoetes,
Summa *petit* scopuli, siccaque in rupe *resedit.* 180
Illum et *labentem* Teucri et risere natantem,
Et salsos *rident* revomentem pectore fluctus.
Hic laeta extremis est spes *accensa* duobus
Sergesto Mnestheique Gyan superare morantem.
—VIRGIL, *Æneid, Book V.*

26 1. Parse the words in italics, conjugating the verbs.

2 2. Distinguish between *oblĭtus* and *oblītus, decōris* and *decŏris.*

2 3. *juveni.* Who? Compare *juvenis* and *senex.*

2 4. *puppi.* What nouns have the abl. in *-i*?

2 5. *imo.* Give the pos. and comp., as well as the other form of the superl.

2 6. *fluens in veste.* Explain.

4 7. Scan lines 172, 177, 178, 181.

Education Department, Ontario.

JULY EXAMINATIONS, 1883.

INTERMEDIATE AND THIRD CLASS.

FRENCH.

TIME— TWO HOURS.

Values.

I.

GRAMMAR AND COMPOSITION.

2 1. When are *mon*, *ton*, *son* used before a feminine noun?

4 2. Write down the feminine of *vieux*, *sec*, *grec*, *malin*.

4 3. What are the two meanings of *quelque*? When is it written in two words?

12 4. Express in French: *we have walked; that I might have walked; shall I not have flattered myself; let us not go away.*

10 5. Write down the 1st pers. sing. imperf. subj. act. of the verbs—*courir*, *tenir*, *s'asseoir*, *voir*, *valoir*.

12 6. What classes of adjectives are always placed after the noun they qualify?

6 7. When does the past participle agree with its direct regimen? Give an example.

8. Translate into French:—

5 (*a*) He is taller than I by two inches.
5 (*b*) What lesson have you learnt?
5 (*c*) I am very sorry you cannot come.
10 (*d*) The more difficult a thing is, the more glorious it is to do it well.
5 (*e*) It was beginning to rain when we set out
5 (*f*) He employs everybody to obtain that place.
7 (*g*) They came to us when we were not thinking of them.
7 (*h*) Are those your gloves? Yes, they are.
7 (*i*) What I most wish, is to come and see you.
34 (*j*) The success appeared at first to correspond with

[OVER.

Values.

the hopes of the Convention: the insurgents, obeying the orders of their chiefs, seemed to accept the amnesty in good faith, and many without doubt were sincere in accepting it. Hoche himself trusted appearances and believed the insurrection subdued.

II.—ÉMILE DE BONNECHOSE: *Lazare Hoche.*

Translate:

48 Ainsi conduite, l'entreprise avait des chances réelles de succès, dans l'état où étaient en France les esprits et au plus fort de la réaction thermidorienne contre les terroristes et la Convention. Mais la prince qui aurait pu rallier toutes les fractions du parti royaliste ne parut pas; les démêlés entre les chefs, leurs longues hésitations pour le débarquement, firent perdre un temps précieux. Enfin l'avis de Puisaye l'emporta: le commodore Warren décida la descente: elle eut le 27 juin 1795 dans la baie de Quiberon, formée d'un côté par la côte de Bretagne, de l'autre par une presqu'île longue d'environ deux lieues et dont la largeur varie sans dépasser trois kilomètres.

6 1. *Avait des chances.* Distinguish from *avait quelques chances.*

12 2. Give the principal parts of *conduite, parut, pu, perdre.*

8 3. *Le 27 juin* 1795. Express in words.

15 4. Write explanatory notes on *la réaction thermidorienne: les terroristes: la Convention.*

III.—DE FIVAS' READER.

60 Translate:

Malgré la barbarie de leur religion, les anciens Mexicains approchaient de la civilisation. Les Européens, en venant les armes à la main dans le Mexique, pour s'emparer de ce beau pays qui n'avait jamais eu aucune relation avec eux, furent tout étonnés de trouver des villes bien peuplées, ornées de temples, de palais, d'aqueducs, et de jardins, et entourées de campagnes parfaitement cultivées et traversées de chemins commodes. Ce fut surtout la ville de Mexico qui excita leur étonnement. Cette ville, bâtie sur le lac Tezcuco, dans une plaine charmante, était entrecoupée de canaux, comme quelques-unes de nos villes maritimes. Les temples et les palais étaient munis de

Values.

tours et de ramparts. De grands marchés offraient une variété étonnante des riches productions du pays. Des jardins et des parterres de fleurs convraient les petites îles du lac. Dans cette capitale, comme dans les autres grandes villes de l'empire mexicain, les ateliers et les boutiques brillaient d'objets de luxe.

3 1. *En venant.* What part of the verb do other prepositions govern ?

8 2. *Munis de tours.* What other preposition is used after passive verbs to denote agency, &c. Distinguish it from *de* in this use.

Education Department, Ontario.

JULY EXAMINATIONS, 1883.

INTERMEDIATE AND THIRD CLASS.

GERMAN.

TIME—TWO HOURS.

Values

I.

GRAMMAR AND COMPOSITION.

8 1. Write the proper definite article before each of the following nouns:—Sonntag, Weib, Hoffnung, Gebet, Fräulein, Irrthum, Alterthum, Abtei.

15 2. Decline fully die Hand and ein ganzer Tag.

6 3. Compare hoch, ſparſam, nah.

9 4. Distinguish the two uses of wer. Express in German: What kind of a pen?

16 5. Give the principal parts of the verbs Ziehen, gleichen, zeihen, befehlen, fahren, hauen, darbieten, widerſprechen.

6 6. Write out fully the imperf. subj. act of wiſſen.

10 7. When is the nominative case placed after the verb?

8. Translate into German:

4 (*a*) I am true to my friends.
4 (*b*) We arrived yesterday.
4 (*c*) We hope to receive a letter to-morrow.
6 (*d*) I asked him if he knew it.
6 (*e*) Not being rich, I have no friends.
6 (*f*) When she saw me, she began to cry.
6 (*g*) I speak of some one, whom you have not yet seen.
44 (*h*) In the time of Henry IV., King of France, a peasant was once riding (reiten) from his village to Paris. Not far from the city he met a splendid (ſtattlich) horseman. It was the king. His retinue (Gefolge) had intentionally (abſichtlich) remained behind at some distance (Entfernung). "Whence do you come, my Friend? Have you business in Paris?" "Yes," answered (antworten) the peasant, "I would also like (mögen gern) to see once, our good king, who loves his people so tenderly (zärtlich)."

[OVER.

Values

II.

ADLER'S READER AND SCHILLER.

42 Translate:

,,Die goldne Kette gib mir nicht,
Die Kette gib den Rittern,
Vor deren kühnem Angeſicht
Der Feinde Lanzen ſplittern;
Gib ſie dem Kanzler, den du haſt,
Und laß ihn noch die goldne Laſt
Zu andern Laſten tragen.

Ich ſinge, wie der Vogel ſingt,
Der in den Zweigen wohnet;
Das Lied, das aus der Kehle dringt,
Iſt Lohn, der reichlich lohnet.
Doch darf ich bitten, bitt ich eins:
Laßt mir den beſten Becher Weins
In purem Golde reichen.''

Er ſetzt' ihn an, er trank ihn aus;
,,O Trank voll ſüßer Labe!
O wohl dem hochbeglückten Haus,
Wo das iſt kleine Gabe!
Ergeht's euch wohl, ſo denkt an mich,
Und danket Gott ſo warm, als ich,
Für dieſen Trunk euch danke.''

8 1. Parse deren, darf, mich, ergeht.
4 2. Eins. Parse and explain its use.
4 3. Distinguish between Trank and Trunk.
3 4. Der Vogel. Decline the plural.
2 5. Ergeht's u s.w. Supply the ellipsis.

40 Translate:

Die vereinigten Provinzen nämlich, durch eine Reihe von Unglüksfällen kleinmüthig gemacht, hatten endlich den Entſchluß gefaßt, unter die Oberhoheit Frankreichs zu treten, und durch Aufopferung ihrer Unabhängigkeit ihre Exiſtenz und ihre alten Privilegien zu retten. Mit dieſem Auftrage war vor nicht langer Zeit eine Geſandtſchaft nach Paris abgegangen, und die Ausſicht auf dieſen mächtigen Beiſtand war es vorzüglich was den Muth der Antwerper ſtärkte. Heinrich der Dritte, König von Frankreich, war für ſeine Perſon auch nicht ungeneigt, dieſes Anerbieten ſich zu Nutze zu machen; aber die Unruhen, welche ihm die Intriguen der Spanier in ſeinem eigenen Königreiche zu erregen wußten, nöthigten ihn wider ſeinen Willen, davon abzuſtehen. Die Niederländer wandten ſich nunmehr mit ihrem Geſuche an die Königin Eliſabeth von England, die ihnen auch wirklich, aber nur zu ſpät für Antwerpens Rettung, einen thätigen Beiſtand leiſtete.

4 1. Nämlich. What is the meaning of this word?
6 2. Parse Aufopferung, Zeit, Perſon.

Values

11 3. Give the meaning of the different parts of the compound words, vorzüglich, Unabhängigkeit, Anerbieten.

4 4. Give the principal parts of the verbs treten, abſtehen.

4 5. Beiſtand leiſtete. What assistance did Elizabeth send?

10 Translate:

Und es wallet und ſiedet und brauſet und ziſcht,
Wie wenn Waſſer mit Feuer ſich mengt,
Bis zum Himmel ſpritzet der dampfende Giſcht,
Und Fluth auf Fluth ſich ohn' Ende drängt,
Und will ſtch nimmer erſchöpfen und leeren,
Als wollte das Meer noch ein Meer gebären.

1. In what points does Schiller's version of the Diver differ from the historical account?

Education Department, Ontario

JULY EXAMINATIONS, 1884.

INTERMEDIATE, THIRD AND SECOND CLASSES.

WRITING.

Examiner—J. A. McLellan, LL.D.

(To be written but once).

Values.

From dictation—

20 1. The first stanza of the Destruction of Sennacherib's Host.

20 2. The following promissory note:—

Toronto, 3rd May 1884.

Three months from date I promise to pay James Young Fifteen Dollars; value received.

William Smith.

20 3. Write each of the following letters, joined three times, viz.:—*a*, *b*, *c*, *d*, *e*, *f*, *k*, thus—*aaa*, &c.

15 4. Write on ruled paper (using the staff of thirds) the words—Smith, Young, Effigy. Begin each word with a capital.

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

INTERMEDIATE AND THIRD CLASS.

ENGLISH GRAMMAR.

Examiner—J. Dearness.

Values.

A.— Who can say
Why to-day, to-morrow, will be yesterday?

B.—Once upon a time, there stood a town in Italy, at the foot of Mount Vesuvius, which was to Rome what Brighton or Hastings is to London—a very fashionable watering place, at which Roman gentlemen and members of the senate built villas, to which they were in the habit of retiring from the fatigues of business or the broils of politics. —*Fourth Reader.*

C.— To each his sufferings: all are men
Condemn'd alike to groan;
The tender for another's pain,
The unfeeling for his own.
Yet, ah! why should they know their fate,
Since sorrow never comes too late,
And happiness too swiftly flies?
Thought would destroy their paradise.
No more—where ignorance is bliss
'Tis folly to be wise. —*Gray.*

15 1. (*a*) Write, and state the kind and relation of the propositions of which the verbs are: (A) *can, will be;* (B) *is, built;* (C) *flies, is* (bliss).

5 (*b*) Write the detailed analysis of the propositions of which the verbs are: (A) *will be;* (C) *are.*

20, 2½ each 2. Parse: (A) *say;* (B) *what, retiring;* (C) *condemn'd, to groan, bliss, to be wise.*

3. Fully supply the ellipsis in each of the following propositions or sentences:—

3 (in C) (*a*) To each his sufferings.
2 (*b*) The unfeeling for his own.
3 (*c*) No more—

[OVER

Values.

1 and (*d*) He is taller than I.
3 (*e*) He cannot but succeed.

8 4. "Living beings are divided into two classes or sexes. Things without life are not of either sex. In like manner nouns are divided into three classes or sorts, called Genders, which correspond to the three classes of things just mentioned." – *Text-book.*

Apply this basis of gender classification to decide the gender of the nouns in the sentence: "A living dog is better than a dead lion." Defend it (the basis of classification) or suggest a better.

16 5. State the special uses of each of the relatives: *who, which, that* and *what.*

6 6. "The object of a verb may be (1) a noun, (2) a pronoun, (3) an adjective used substantively, (4) a verbal noun (gerund), (5) a verb in the infinitive, or (6) a noun proposition. Compose sentences to illustrate the forms of the object numbered (4), (5) and (6).

7. Rewrite the following sentences, making corrections where necessary. Give your reasons for every change you make:

3 (*a*) Each of us has their own reasons.
3 (*b*) David was the youngest of his brethren.
3 (*c*) Half the people in the world don't know how the other half lives.
3 (*d*) One of the most valuable books for the improvement of the young that has ever appeared in any language.
12 (*e*) James is the cleverest of the two, but since Willie has came to school regular, he has improved as fast as James ever done.

8. Without assigning reasons, improve the construction of the following sentences:

2 (*a*) All that glitters is not gold.
2 (*b*) You have injured instead of improved your cause.
3 (*c*) Erected to the memory of John Phillips accidentally shot as a mark of affection by his brother.
4 (*d*) Try and thoroughly correct every mistake.
6 (*e*) Extract B. page 1,—"Once upon a time......politics."

Values.

9. Distinguish:

4 [*a*] He saw them before I.
He saw them before me.

8 [*b*] He only mourned for his brother.
He mourned only for his brother.
He mourned for his only brother.
He mourned for his brother only.

4 10 [*a*] With prefixes form derivatives from *vert:* (turn) meaning respectively: to turn back, to turn against, to turn to, and to overturn.

11 [*b*] Give the derivation and meaning of the following
2½ each words: *millennium*, *ejaculation*, *democracy*, *deliberation*, *mitigate*.

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

INTERMEDIATE AND THIRD CLASS.

ENGLISH LITERATURE.

Examiner—J. E. HODGSON, M.A.

NOTE—20 *per cent. of the total value (150) of this paper will depend on the literary form of the candidate's answers.*

Values.

1. "Fired at the sound, my genius spreads her wing,
And flies where Britain courts the western spring;
Where lawns extend that scorn Arcadian pride,
And brighter streams than fam'd Hydaspes glide,
There all around the gentlest breezes stray,
There gentle music melts on every spray;
Creation's mildest charms are there combined,
Extremes are only in the master's mind!
Stern o'er each bosom reason holds her state,
With daring aims irregularly great;
Pride in their port, defiance in their eye,
I see the lords of human kind pass by."

12 (*a*) Give the sense of this passage in your own words.
4 (*b*) Write notes on '*Arcadian pride,*' '*fam'd Hydaspes*'.
6 (*c*) "*There gentle music melts.*" Expand this metaphor into a simile.

10 2. In the Traveller Goldsmith aims at teaching two great moral lessons." What are these lessons, and how does he try to inculcate them?

3. Write notes explanatory of the italicized portions of the following lines:—

3 (*a*) "And *drags* at each remove *a lengthening chain.*"
2 (*b*) "Blest be those feasts with *simple plenty crowned.*"
1 (*c*) "Laugh at the jests or pranks that never *fail.*"
2 (*d*) "Ye lakes, whose vessels catch the *busy gale.*"
2 (*e*) "The naked negro *panting at the line.*"
2 (*f*) "*These rocks by custom turn to beds of down.*"
3 (*g*) "Woods over woods, in *gay theatric pride.*"

[OVER

Values.

2 (*h*) "The pregnant quarry *teemed with human form.*"
3 (*i*) "Lift the tall *rampire's artificial pride.*"
4 (*k*) "While the *pent* ocean, rising o'er the *pile,*
Sees an *amphibious world* beneath him smile."

13 4. It has been said of Goldsmith that he essayed all departments of letters, and was thoroughly successful in each.

How far is this criticism true, and in what respects is it false?

5 5. Define a perfect rhyme, and quote from the elegy two examples of imperfect rhymes.

6. Give quotations from the elegy illustrating—
5 (*a*) Eventide in rural scenes.
5 (*b*) "The place that knows them now shall know them no more."
5 (*c*) "Vanity of vanities, all is vanity."

7. Discuss the *poetical* force of the italicized words in the following:—
4 (*a*) "The *lowing* herd wind *slowly* o'er the lea."
2 (*b*) "And *drowsy tinklings* lull the distant folds."
2 (*c*) "Molest her *ancient* solitary reign."
2 (*d*) "Or climb his knees, the *envied* kiss to share."
4 (*e*) "*Chill* penury repressed their *noble rage.*"
2 (*f*) "The *little* tyrant of his fields withstood."

15 8. Sketch, after Burke, some of the atrocities of the French Revolution.

To what causes does he attribute the ferocity of the French populace?

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

INTERMEDIATE, THIRD AND SECOND CLASSES.

COMPOSITION.

Examiner—JAS. F. WHITE.

Values.

35 1. *In your own words*, describe with suitable detail the following scene :—

How oft upon yon eminence our pace
Has slackened to a pause, and we have borne
The ruffling wind, scarce conscious that it blew,
While Admiration, feeding at the eye,
And still unsated, dwelt upon the scene!
Thence with what pleasure have we just discerned
The distant plough slow moving, and beside
His laboring team that swerved not from the track,
The sturdy swain diminished to a boy!
Here Ouse, slow winding through a level plain
Of spacious meads, with cattle sprinkled o'er,
Conducts the eye along his sinuous course
Delighted. There, fast rooted in their bank,
Stand, never overlooked, our favorite elms,
That screen the herdsman's solitary hut;
While far beyond, and overthwart the stream,
That, as with molten glass, inlays the vale,
The sloping land recedes into the clouds;
Displaying on its varied side the grace
Of hedge-row beauties numberless, square tower,
Tall spire, from which the sound of cheerful bells
Just undulates upon the listening ear,
Groves, heaths, and smoking villages, remote.

—*Cowper.*

2. Show wherein the following are faulty; re-write them in a correct form :—

5 *(a)* "I believe that when he died the Cardinal spoke at least fifty languages."

4 *(b)* "It was the want of imagination, I suppose, that failed them."

5 *(c)* "I never remember to have heard his voice except when in anger."

[OVER

Values.

6 (*d*) "I had in every despatch complained of the material information that Colonel Harvey was keeping from me."

7 (*e*) "This world, with all its trials, is the furnace through which the soul must pass and be developed before it is ripe for the next world."

8 (*f*) "The unfortunate foreigner was flogged for disobeying the imperial mandate—for not wearing, and for wearing, the obligatory, and the interdicted costumes."

3. *For Intermediate and Third Class Candidates only.*

30 WANTED, for S.S. No. 6, Elma, a Teacher holding a Third-Class Certificate. Address, stating age, experience, and salary required, JOHN GRAHAM, Newry.

In answer to the above advertisement, write an application, dating your letter from Belleville, and signing it A. B.

For Second Class Candidates only.

30 Choose *one* of the following subjects for a composition (25 to 30 lines) :—

(*a*) The Press.
(*b*) The Canadian Pacific Railway.
(*c*) "How small, of all that human hearts endure,
That part which kings or laws can cause or cure."

Education Department, Ontario

JULY EXAMINATIONS, 1884.

INTERMEDIATE, THIRD AND SECOND CLASSES.

DICTATION.

Examiner—JAS. F. WHITE.

Note for the Presiding Examiner—This paper is not to be seen by the Candidates. It is to be read to them *three times*—*first*, at the ordinary rate of reading, they simply paying attention to catch the meaning of the passage; *second*, slowly, the candidates writing; *third*, for review.

Perhaps no poem of the century has been as variously appraised by critics as Tennyson's "Princess." When it first appeared, Englishmen were savagely in earnest over what they considered positive and urgent realities, and on these they concentrated their attention to the almost complete exclusion of whatever would not directly assist them in their practical warfare. Naturally the literary criticism of the day was tinged with the asperities engendered of the political strifes. Critics considered all such productions as effeminacies undeserving of time or thought; they were intent upon descrying their defects and imperfections rather than in discovering their excellences—though it must be admitted that they were not wholly insensible to their beauties. They quite unanimously pronounced it unworthy of its predecessors. They variously described it as an elegant trifle, as a brilliant serio-comic witticism, as a mixture of modern ideas and manners with those of chivalry and romance; as sentimental, incongruous, and having glaring faults inextricably interwoven with inconsiderable beauties. Later critics, especially in this country, who brought a serener judgment, a more genial and poetical temper, declared that instead of being a mere piece of embroidery, on which trifles were cleverly wrought, it had a distinct and pervading unity.

Education Department, Ontario

JULY EXAMINATIONS, 1884.

INTERMEDIATE AND THIRD CLASS.

ARITHMETIC.

Examiner—J. A. McLellan, LL.D.

Note—11 *marks each, for* 1 *and* 2 ; 6 *for each of the others.*

1. Simplify $\dfrac{(4\frac{1}{5} - 3\frac{1}{5}) \times (1\frac{1}{3} - \frac{5}{6})}{(1\frac{1}{7} - \frac{3}{14}) \div (\frac{2}{11} - \frac{1}{7})} \div \dfrac{\frac{15}{12}}{\frac{17}{31}}$.

2. Find the cost of ·0625 of 112 lbs. of sugar, where one pound costs ·0703125 of 17*s*. $9\frac{1}{3}$*d*.

3. A. and B. were employed to do a piece of work for $60. They were to be paid in proportion to their ability to work, which was 4 to 5, and to the time each worked, which was 3 to 4. How much did each receive?

4. A quantity of silk was sold at a loss of 1 per cent.; had it been sold for 4*s*. $2\frac{1}{2}$*d*. per yard there would have been a gain of 1 per cent. Find the actual selling price.

5. A person rides to town at the rate of $8\frac{1}{4}$ an hour, and after resting 35 minutes walks back at the rate of $2\frac{3}{4}$ miles an hour. The whole time occupied was 7 hours $20\frac{5}{11}$ minutes. Find the distance.

6. Instead of a yard measure a draper uses a stick which is 36.35 inches long. What does he lose per cent. by so doing?

7. When the course of exchange between London and New York is quoted at 4·96, London exchange (*i.e.* English money) is said to be at 2 per cent. premium. From this calculate the par of exchange.

8. If silver is worth $1.10 per ounce, and gold $17 per ounce, find the weight of a ten dollar coin containing 37 parts in 40 of gold, and the rest silver.

9. Equal volumes of iron and copper are found to weigh 77 oz. and 89 oz. respectively. Find the weight of $10\frac{1}{2}$ feet of circular copper rod, when 9 inches of iron rod of equal diameter weigh $31\frac{9}{10}$ ounces.

[OVER

10. *(a)* The expense of carpeting a room 15 feet wide was \$52.80; but if the length had been a yard less, the expense would have been \$46.20. Find length of the room.

(b) A rectangular solid $4\frac{1}{2}$ feet long, $3\frac{1}{2}$ feet broad, and $1\frac{1}{3}$ feet thick, is increased 11 inches in thickness. By how much must the breadth be diminished, so that the solid may retain the same bulk as before?

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

INTERMEDIATE AND THIRD CLASS.

ALGEBRA.

Examiner—J. C. GLASHAN.

Values.

8 1. Divide $(a^4 - b^4)(x^4 - y^4) - 4abxy(b^2x^2 - a^2y^2)$ by $a^2(x^2 - y^2) + b^2(x^2 + y^2) + 2abxy$.

2. Simplify

7 (*a*)
$$\frac{\dfrac{n+m}{m} - \dfrac{m+n}{n}}{\dfrac{n-m}{m} + \dfrac{m-n}{n}};$$

7 (*b*)
$$\frac{(a-b)(b-c)(c-a)}{abc} + \frac{b-c}{a} + \frac{c-a}{b} + \frac{a-b}{c}.$$

3. Resolve into linear factors

8 (*a*) $12(3x-2y)^2 - 44(3x-2y)(4y-2x) - 45(4y-2x)^2$;

8 (*b*) $4(ab+cd)^2 - (a^2+b^2-c^2-d^2)^2$.

8 4. Show that

$$(a^2x + ay + z)(b - c) + (b^2x + by + z)(c - a) + (c^2x + cy + z)(a - b) = (a-c)(c-b)(b-a)x.$$

8 5. If $y + z = 2a,\ z + x = 2b,\ x + y = 2c,$ find the value of $(x + y + z)(xy + yz + zx) - xyz$ in terms of a b and c.

8 6. If
$$\frac{a-b}{y-x} = \frac{b-c}{z-y} = \frac{a+b+c}{2(x+y+z)},$$
prove that
$$\frac{a}{y+z} = \frac{b}{z+x} = \frac{c}{x+y}.$$

[OVER

Values.

7. Solve

8 (a) $$\frac{x-1}{x-2}-\frac{x-2}{x-3}=\frac{x-5}{x-6}-\frac{x-6}{x-7};$$

7 (b) $$\frac{a}{x-a}-\frac{b}{x-b}=\frac{a-b}{x+c};$$

8 (c) $$(x^2-9)^2-11(x^2-9)=80.$$

7 8. Find the values of x and y that will satisfy both

$$\frac{3}{x}+\frac{2}{y}=2 \qquad \text{and} \qquad \frac{2}{x}+\frac{3}{y}=\frac{1}{2}.$$

8 9. A boy has a bag of nuts. He gives three more than two-fifths of them to his sister, six more than a quarter of the remainder to his brother, and eats three-thirteenths of what then remains, and finds he has exactly two-sevenths of the original number left. How many had he at first?

Education Department, Ontario

JULY EXAMINATIONS, 1884.

INTERMEDIATE AND THIRD CLASS.

EUCLID.

Examiner—N. F. DUPUIS, M.A.

Values.

10 1. Define a triangle; name its parts; classify the kinds of triangles.

Three indefinite straight lines, of which no two are parallel, drawn in a plane, form a triangle.

10 Show that they can form only one triangle, and that in a particular case they will not form any.

12 2. If a side of a triangle be produced the exterior angle is equal to the sum of the opposite interior angles.

6 If all the sides be produced, how many angles *different* in magnitude are formed, and what is the sum of these?

12 3. Triangles upon equal bases and between the same parallels are equal to one another.

10 A, B, C is a triangle, and D, E, F are taken upon the sides BC, CA, AB respectively, so that BD is double DC, CE is double EA, and AF is double FB. Compare the area of the triangle DEF with that of the triangle ABC.

14 4. In any right-angled triangle the square upon the side subtending the right angle is equal to the sum of the squares upon the sides containing the right angle.

6 The sides of a triangle are 33, 56, 65; determine whether it is right-angled.

14 5. If a straight line be bisected and produced to any point, the rectangle under the whole line thus produced, and the part produced, together with the square upon half the line, is equal to the square upon the line made up of the half and the part produced.

6 Show that this problem is the application of the Algebraical theorem $(a+b)(a-b)=a^2-b^2$ to Geometry.

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

INTERMEDIATE AND THIRD CLASS.

HISTORY.

Examiner—J. Dearness.

Values.	
7	1. Write a short account of the Gracchi.
9	2. Give the cause, chief events, and immediate results of the Civil War out of which came the overthrow of the Commonwealth and the establishment of the imperial rule in Rome.
10	3. What effects were produced upon the English people by the Norman Conquest?
10	4. Write a short sketch of the Wars of the Roses. Conclude it by stating the most important changes in the condition and government of the nation which they brought about.
10	5. What are the most noteworthy events in British history from the execution of Charles I. to the Restoration?
10	6. State the chief provisions of what you regard as the two most important bulwarks of the liberties of the British subject.
9	7. What causes led to the War of 1812? Who were the prominent actors in it? How was it concluded?
10	8. How was Responsible Government established in Canada?

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

INTERMEDIATE AND THIRD CLASS.

GEOGRAPHY.

Examiner—JAS. F. WHITE.

Values.	
12	1. Briefly explain—dew, rainbow, twilight, tides, change of seasons.
13	2. Name in order, beginning at the east, the counties of Ontario on the St. Lawrence and Lake Ontario; mention their cities, towns and villages, with the industries or the exports of each important place.
10	3. From what countries do we receive sugar, rice, cotton, tea, figs, cinnamon, tobacco?
12	4. Sketch the map of Nova Scotia, noting the cities and chief towns, the mountains, and bays or gulfs.
16	5. Under these heads— (*a*) Boundaries and physical features, (*b*) Soil and climate, (*c*) Products and manufactures, (*d*) People and government— Describe *one* of the following countries:—Brazil, Spain, Egypt, Hindostan.
12	6. What and where are—Patagonia, Hong Kong, Fraser, Munich, Mozambique, Chimborazo, Assam, Soudan, Ceylon? Note any matter of interest in connection with each.

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

INTERMEDIATE, THIRD AND SECOND CLASSES.

MENTAL ARITHMETIC.

Examiner—J. A. McLELLAN, LL.D.

NOTE—$12\frac{1}{2}$ *marks for each question.*

1. A man agreed to carpet a room 15 feet wide with carpet 27 inches wide, at the rate of $1.30 the running yard, and lost $12 thereby. Had he charged $1.75 per running yard he would have made $15. Find the length of the room.

2. A. and B. are partners. A. puts in 40 per cent. of the stock for four months, and B. the remainder for three months. How should a gain of $3400 be divided?

3. The amount of a sum of money at a certain rate per cent. is $1415 for three years, and $1387.50 for $2\frac{1}{2}$ years. Find the principal and the rate.

4. If a sum of money be invested in 6 per cent. stock at 96 it will yield $12.50 less per year than if invested in 5 per cent. stock at 75. Find the amount to be invested.

5. The length of a room is to its width as 5 to 4, and height of ceiling 12 feet: the room contains 3840 cubic feet. Find the length and breadth.

6. Out of a circular plate 22 inches in diameter, is cut a concentric circular plate 8 inches in diameter. Find the area of the remaining circular ring ($\pi = 3\frac{1}{7}$).

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

INTERMEDIATE AND THIRD CLASS.

NATURAL PHILOSOPHY.

Examiner—J. C. GLASHAN.

Values.

4 1. State the conditions of equilibrium of two forces acting on a rigid body.

8 If the ends of a short rope be pulled in opposite directions by two men, each exerting a force of 25 lbs., what will be the tension of the rope?

4 2. What is meant when a line is said to completely represent a force?

4 State the conditions of equilibrium of three forces acting at a point.

10 Three forces of 10, 24 and 26 units respectively act at the same point. Draw a diagram showing how they must be adjusted to maintain equilibrium.

4 3. When are two parallel forces said to act in the same and when in opposite directions?

8 Give the rules for finding the resultant and the centre of two parallel forces acting on a rigid body.

8 Draw a diagram showing how *parallel* forces of 3, 5 and 8 units respectively must be arranged to maintain equilibrium. Mark in the diagram the relative distances between the lines of action of the forces.

4 4. State the principle of moments.

8 Find the centre of gravity of five equal weights placed at five of the angular points of a regular hexagon.

10 5. What power must a man weighing 160 lbs. exert to support himself by means of a tackle of two pulley-blocks, each containing two wheels and each weighing 12 lbs.?

4 6. Show how to find the specific gravity of a liquid by weighing a solid in it.

10 A body weighs 8 oz. in water and 12 oz. in a liquid

[OVER

Values.

whose specific gravity is ·7. Determine the specific gravity of a liquid in which the body weighs 15 oz.

4 7. Describe the hydraulic press.

10 Through the flat lid of a closed vessel goes a pipe which reaches to a vertical height of 24 ft. The lid has an area of 25 sq. in., and the pipe a cross section of 1 sq. in. Suppose the vessel and pipe to be full of water, what is the force tending to burst off the lid?

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

INTERMEDIATE AND THIRD CLASS.

CHEMISTRY.

Examiner—N. F. DUPUIS, M.A.

Values.

4 1. What is *(a)* an element?
4 *(b)* A molecule?
4 *(c)* A dyad?

4 2. Having water only, what metal would you take by
3 which to obtain hydrogen? Give the action by formula.
3 Why can you not keep hydrogen pure in a bottle closed
3 by a common cork? Are any other gases like it in this
5 respect? Mention any law which bears upon this point.

5 3. From Liquor Ammoniæ of the shops, how can you get Ammonia Gas?
9 Calculate the specific weight of this gas, and give its prominent properties.
6 Mention any accurate test for the presence of this gas in water.

8 4. If a piece of Phosphorus be placed on the wick of a spirit lamp, and the lamp be lighted the Phosphorus will not burn. Explain why.

5 5. Give the name and composition of the gas which "burns blue" at the top of the coals in a common coal
6 stove. How does it get there?
5 Give any artificial way of obtaining it.

3×2=6 6. Give the names and formulæ of any three common
10 sulphur compounds, and shew how any one of them is obtained.

10 7. If one grain of Carbon be completely burned with Oxygen, what average volume of Carbon Dioxide is produced?

Education Department, Ontario

JULY EXAMINATIONS, 1884.

INTERMEDIATE, THIRD AND SECOND CLASSES.

BOTANY.

Examiner—J. DEARNESS.

Values.

6 1. What organs of the plant serve the purposes of nutrition, and what organs the purposes of reproduction?

10 2. "The growth of a plant consists in the multiplication of its cells." Explain.

10 3. Describe minutely the germination of a dicotyledonous seed.

12 2½ each 4. Describe the arrangement, venation,—general outline, apex, and margin of blade—of the foliage leaf of any one of the following plants: maple, clover, rose, morning-glory, pink, Indian corn.

9 5. *(a)* Distinguish between terminal and axillary inflorescence.

9 *(b)* Illustrate by diagrams any two of the following kinds of flower clusters: cyme, raceme, umbel, corymb, panicle, catkin.

9 6 *(a)* Name the essential parts of a flower, and give the relative positions of these parts.

9 *(b)* State the particular function of each essential part.

7 7. *(a)* What is the distinction between fruit and seed?

3 Make a drawing of the fruit of the pea.

7 *(b)* Describe botanically the fruit of any one of the following plants: tomato, apple, cherry, strawberry, mulberry.

9 8. Refer to its natural order any plant commonly found in gardens, and name two other genera of plants belonging to the same order.

NOTE—*Credit will be given for neat diagrams where such can be used to illustrate the answer.*

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

INTERMEDIATE, THIRD AND SECOND CLASSES.

LATIN GRAMMAR AND COMPOSITION.

Examiner—J. E. HODGSON, M.A.

Values.

5 1. Give, with exceptions, the rules for the grammatical gender of nouns belonging to Dec. II.

12 2. Decline in full—deus, senex, fulmen; and write the genitive singular, and the dative plural, of the following combinations:—quidam miles, felicior filia, pater familias.

6 3. Give the other degrees of comparison of—idoneus, humilis, nequam, audacter, bene, benevolus.

10 4. Conjugate (*i.e.* give principal parts of)—mico, spondeo, peto, surgo, cædo, audeo, fio, nolo, edo, diligo.

8 5. Define and exemplify the following terms, as applied to verbs:—frequentative, desiderative, inceptive, diminutive.

10 6. 'A messenger set out (proficiscor) to warn (admoneo) the lieutenants (legatus).' Turn into Latin, expressing idiomatically, in as many ways as you can, 'to warn the lieutenants.'

10 7. In the italicised portions of the following sentences, for the direct form of expression (oratio recta), substitute the indirect (oratio obliqua):—

(*a*) Ariovistus respondit: "*Obsides non reddam.*"
(*b*) Ariovistus ad Cæsarem legatos mittit: "*Volo de his rebus tecum agere.*"

25 8. Translate into Latin—

(*a*) I shall return home on the first of May.
(*b*) Catiline was condemned to death in the consulship of Cicero.

[OVER

(*c*) It is the duty of a good man to keep his word.
(*d*) We must obey the laws of our native-land.
(*e*) Cæsar took the town and reduced-it-to-ashes (concremo).

14 9. * Translate into Latin—

Meanwhile many fugitives (lit. many from the rout) reached Utica, all of whom Cato assembled and encouraged to defend the town. When, however, he understood that the citizens were frightened and unwilling to fight, he assigned them ships, that they might set out whithersoever they wished.

Complures interim ex fuga Utica pervenio. Qui omnis Cato convoco hortor, ut oppidum defendo. Quum autem civis perterreo pugno nolo intelligo, navis is attribuo, ut quo volo proficiscor.

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* The Latin words are given in proper order, and no others are to be used.

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

INTERMEDIATE, THIRD AND SECOND CLASSES.

LATIN AUTHORS.

Examiner—J. E. HODGSON, M.A.

Values.

A

Translate—

18 Non sunt in senectute vires. Ne postulantur quidem vires a senectute. Ergo et legibus et institutis vacat aetas nostra muneribus iis, quae non possunt sine viribus sustineri. Itaque non modo quod non possumus, sed ne quantum possumus quidem cogimur. At ita multi sunt imbecilli senes, ut nullum offici aut omnino vitae munus exsequi possint. At id quidem non proprium senectutis vitium est, sed commune valetudinis. Quam fuit imbecillus P. Africani filius is, qui te adoptavit! Quam tenui aut nulla potius valetudine! Quod ni ita fuisset, alterum illud exstitisset lumen civitatis: ad paternam enim magnitudinem animi doctrina uberior accesserat. Quid mirum igitur in senibus si infirmi sunt aliquando, quum id ne adulescentes quidem effugere possint? Resistendum, Laeli et Scipio, senectuti est ejusque vitia diligentia compensanda sunt: pugnandum tamquam contra morbum sic contra senectutem.

10 1. Parse fully—*quidem (vires), institutis, muneribus, quod (non possumus), ita, offici, valetudine, aliquando, effugere, senectuti.*

6 2. Give the derivation of—*ita, officium, communis, lumen, adulescens, diligentia.*

5 3. *P. Africani.* Write his name in full, and indicate, with explanations, his nomen, agnomen, cognomen, praenomen.

2 4. *Laeli.* What case? What common nouns follow the same rule?

1 5. *Itaque non modo quod non possumus.* Supply the ellipsis.

[OVER

Values.

6 6. *Quarta restat causa, quae maxime angere atque sollicitam habere nostram aetatem videtur.* Translate. Enumerate the 'four causes.'

B

Translate:—

20 Haec ubi dicta, locum capiunt, signoque repente
Corripiunt spatia audito, limenque relinquunt,
Effusi nimbo similes: simul ultima signant.
Primus abit longeque ante omnia corpora Nisus
Emicat, et ventis et fulminis ocior alis.
Proximus huic, longo sed proximus intervallo,
Insequitur Salius: spatio post deinde relicto
Tertius Euryalus;
Euryalumque Helymus sequitur: quo deinde sub ipso
Ecce! volat calcemque terit jam calce Diores,
Incumbens humero; spatia et si plura supersint,
Transeat elapsus prior, ambiguumve relinquat.
Jamque fere spatio extremo, fessique, sub ipsam
Finem adventabant; levi cum sanguine Nisus
Labitur infelix, caesis ut forte juvencis
Fusus humum viridesque super madefecerat herbas.
Hic juvenis, jam victor ovans, vestigia presso
Haud tenuit titubata solo; sed pronus in ipso
Concidit immundoque fimo, sacroque cruore.
Non tamen Euryali, non ille oblitus amorum:
Nam sese opposuit Salio, per lubrica surgens;
Ille autem spissa jacuit revolutus arena.

8 1. Parse fully—*signo, longe, ipso, levi, super, amorum, jacuit, virides.*

5 2. Distinguish - relīqui, relĭqui, lābor, lăbor, vēnit, vĕnit; lēvis, lĕvis; regēre, regĕre.

7 3. Scan the first three verses of the extract, marking and naming the cæsura of each verse, marking the quantity of each syllable, and naming the metrical figure in the second verse.

5 4. What prize did Æneas offer *(a)* to each competitor in the foot-race, *(b)* to each of the first three respectively?

2 5. Name the occasion and the location of the celebration of these games.

Values.	
5	6. Write brief notes (not grammatical) on the italicised words in the following:—

(a) Nec *litora* longe
Fida reor *fraterna Erycis.*
(b) Seu *crudo* fidit pugnam committere *caestu.*
(c) Sic fatus velat *materna* tempora *myrto.*
(d) Salve, *sancte parens.*
(e) *Obstupuit visu Æneas.*

Education Department, Ontario

JULY EXAMINATIONS, 1884.

INTERMEDIATE, THIRD AND SECOND CLASSES.

FRENCH AUTHORS.

Examiner—J. E. HODGSON, M.A.

Values.

SOUVESTRE: *Un Philosophe sous les Toits.*

A

Translate—

35 *Le 12, sept heures du soir.* En rentrant ce soir, j'ai aperçu, debout sur le seuil d'une maison, un vieillard dont la pose et les traits m'ont rappelé mon père. C'était la même finesse de sourire, le même œil chaud et profond, la même noblesse dans le port de la tête, et le même laisser-aller dans l'attitude.

Cette vue a ramené ma pensée en arrière. Je me suis mis à repasser les premières années de ma vie, à me rappeler les entretiens de ce guide que Dieu m'avait donné dans sa clémence, et qu'il m'a retiré, trop tôt, dans sa sévérité.

Quand mon père me parlait, ce n'était point seulement pour mettre en rapport nos deux esprits par un échange d'idées; ses paroles renfermaient toujours un enseignement.

Non qu'il cherchât à me le faire sentir! mon père craignait tout ce qui avait l'apparance d'une leçon. Il avait coutume de dire que la vertu pouvait se faire des amis passionnés, mais qu'elle ne prenait point d'écoliers: aussi ne songeait-il point à enseigner le bien; il se contentait d'en semer les germes, certain que l'expérience les ferait éclore.

10 1. In what respect do the French differ from the English in their mode of expressing dates? Illustrate your answer by indicating, in French, the hour, day, month, and year, of the present examination.

2 2. "In relation to verbs, 'en' differs from all other French prepositions." How?

2 3. *J'ai aperçu.* Why not *j'aperçus?*

[OVER

Values

3 4. Distinguish ans from année. Cite two other pairs of nouns similarly distinguished.

2 5. Which is the stronger negation, 'Ce n'était point,' or 'ce n'etait pas'? Why?

1 6. *Certain.* Parse.

B

Translate—

20 Brave fils et digne mère! comme de tels exemples ramènent à l'amour du genre humain! Dans un accès de fantaisie misanthropique, on peut envier le sort du sauvage et préférer les oiseaux à ses pareils; mais l'observation impartiale fait bien vite justice de tels paradoxes. A l'examen, on trouve que, dans cette humanité mêlée de bien et de mal, le bien est assez abondant pour que l'habitude nous empêche d'y prendre garde, tandis que le mal nous frappe précisément par son exception. Si rien n'est parfait, rien non plus n'est mauvais sans compensation ou sans resource. Que de richesses d'âme au milieu des misères de la société! comme le monde moral y rachète le monde matériel! Ce qui distinguera à jamais l'homme de tout le reste de la création, c'est cette faculté des affections choisies et des sacrifices continués.

6 1. *mère, genre, pareil, parfait, ressource, âme.* Derive, and give English derivatives coming from the same Latin roots.

2 2. ramènent. Write this tense in full.

6 3. Parse fully: *peut, vite, frappe.*

1 4. *Un Philosophe sous les Toits.* Translate *sous les Toits* by a single word.

10 5. Indicate, as clearly as you can, the proper pronunciation of—*chef, imitation, invincible, bonne, ennemis, pareille, certain, août, fleur, paix.*

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

INTERMEDIATE, THIRD AND SECOND CLASSES.

FRENCH GRAMMAR AND COMPOSITION.

Examiner—J. E. HODGSON, M.A.

Values.	
6	1. Indicate the peculiarities in the conjugation of verbs ending in *eler*, *ger*, *yer*.
15	2. Write notes on the gender of—*personne*, *livre*, *crêpe*, *quelque chose*, *voile*.
16	3. Give the 3rd pers. sing. and the 1st pers. pl. of the Pret. Def. and Fut. Abs. of—*s'en aller*, *mourir*, *savoir*, *connaître*, *croître*, *rire*, *vivre*, *résoudre*.
20	4. Translate into French— *(a)* Napoleon was at once an emperor, a warrior and a statesman. *(b)* Vice cannot take root in a heart like yours. *(c)* My brother and sister are attentive. *(d)* He entered his house by the private door. *(e)* Your brother has sent it to me to bring to you.
8	5. What classes of adjectives follow the nouns with which they agree? Give examples.
35	6. Translate into French— Following ancient usage, these men, already covered with honors (won) on the field of battle, reënter their country with all the display of a triumph, preceded and followed by a numerous cortége, sometimes on a car with two or four horses, and by a breach made in the wall of the city.

Education Department, Ontario

JULY EXAMINATIONS, 1884.

INTERMEDIATE, THIRD AND SECOND CLASSES.

GERMAN.

Examiner—J. A. McLellan, LL.D.

Values.

I.

12 1. Decline fully der Ort and das neue Lied.

4 2. Translate—"The longer the nights, the shorter the days."

8 3. Decline the *demonstrative* der, die, das, and the *interrogative* wer.

5 4. Express in German—"Whatever"; "Any one"; Some; What kind of wine?; Three at a time.

5 5. Name and give the meanings of the inseparable prefixes.

12 6. Give the principal parts of the following verbs:—leſen, ziehen, betrügen, riechen, erloſchen, and hauen.

7 7. Write out fully the present indicative active of treten, and the present indicative active of wiſſen.

40 8. Translate—

(1). The richest man of all.
(2). What dost thou take (halten) this for?
(3). Which do you like (gefallen) best?
(4). One must help one's neighbour.
(5). We rode through the forest.
(6). The picture hangs on the wall.
(7). This night they swore to one another that none of them should attempt (wagen) anything on (nach) their own judgment; no one should desert (verlaſſen) the other: in this friendship they would live and die: everyone should, in his own valley, defend the oppressed people in the ancient (uralt) rights of their freedom.

[OVER

Values.

II.

25 Translate—

Die Antwort bringt er ſeinem Herrn
Fu ſchnellem Lauf zurück.
Als der ihn kommen ſieht von fern,
Kaum traut er ſeinem Blick:
„Unglücklichher! wo kommſt du der?“—
„Vom Eiſenhammer.“—„Nimmermehr!
So haſt du dich im Lauf verſpätet?“
„Herr, nur ſo lang, bis ich gebetet.“

„Denn, als von eurem Angeſicht
Ich heute ging verzeiht!
Da fragt' ich erſt, nach meiner Pflicht,
Bei der, die mir gebeut.
Die Meſſe, Herr, befahl ſie mir
Zu hören; gern gehorcht' ich ihr
Und ſprach der Roſenkränze viere
Für euer Heil und für das ihre.“

(1). Parse bringt, kommſt, gebetet.

(2). Point out any ellipses, and supply the necessary words.

(3). Give the meaning of Im Stillen; Er hat es alles inn, Das bärg' ſich meinem Herrn: Als gält'es, Felſen zu verglaſen.

25 Translate—

Ein ſchwarzer Mantel ſchlägt die Lenden,
Sie ſchwingen in entfleiſchten Händen
Der Fackel düſterrothe Gluth,
In ihren Wangen fließt kein Blut;
Und wo die Haare lieblich flattern,
Um Menſchenſtirnen freundlich wehn,
Da ſieht man Schlangen hier und Nattern
Die giftgeſchwollnen Bäuche blähn.

Und ſchauerlich, gedreht im Kreiſe,
Beginnen ſie des Hymnus Weiſe,
Der durch das Herz zerreißend dringt,
Die Bande um den Frevler ſchlingt.
Beſinnungraubend, herzbethörend
Schallt der Erinyen Geſang,
Er ſchallt, des Hörers Mark verzehrend,
Und duldet nicht der Leier Klang:

Translate—

23 Sobald dieſer Kunſtler in Erfahrung gebracht hatte, daß es mit der Brücke ernſtlich gemeint ſei, und das Werk der Vollendueg ſich nähere, ſo bat er ſich von dem Magiſtrat drei große Schiffe von hundert und fünfzig bis fünfhundert Tonnen aus, in welchen er Minen anzulegen gedachte. Außer dieſen verlangte er noch ſechzig Playten, welche mit Kabeln und Ketten aneinander gebunden und mit hervorragenden Haken verſehen, mit eintretender Ebbe in Bewegung geſetzt werden,

und um die Wirkung der Minenſchiffe zu vollenden, in keilförmiger Richtung gegen die Brücke Sturm laufen sollten. Aber er hatte ſich mit ſeinem Geſuch an Leute gewendet, die gänzlich unfähig waren, einen außerordentlichen Gedanken zu faſſen, und ſelbst da, wo es die Rettung des Vaterlandes galt, ihren Krämersinn nicht zu verleugnen wußten.

(1). Give the principal parts of anlegen, Verſehen, laufen, erhielt.

(2). Parse bat, nähere, gedachte, sollten.

(3). und das Werk. . . . What is omitted, and why?

(4). Krämerſinn. Explain.

(5). Außer dieſen. . . . . . Point out the relations of the clauses.

III.

34 Translate—

(1). It is an interesting spectacle to observe man's inventive-genius in conflict with a powerful element, and to see difficulties which are insurmountable to ordinary capacities, overcome by prudence, resolution, and a determined will.

(2). Early on the morning of the sixteenth of May the enemy's forces were in motion.

(3). After the capture of the breast-work, the victory no longer remained doubtful. The Dutch and Zealand troops, who had leaped from their ships in order to fight with the enemy at *close quarters*, at once lost their courage when they looked about them and saw the vessels which constituted (ausmachen) their last refuge, putting off from the shore.

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

MUSIC.

Examiner—J. A. McLellan, LL.D.

Values.

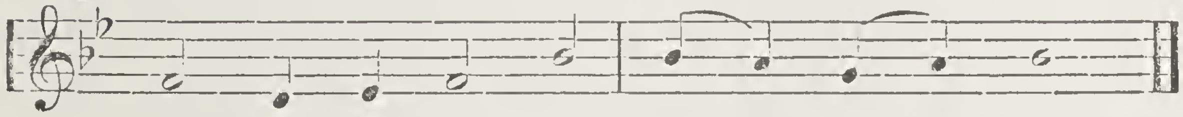
20 1. Write the scales of A major and F major.

25 2. Write four measures of the melody of any song which you have learned.

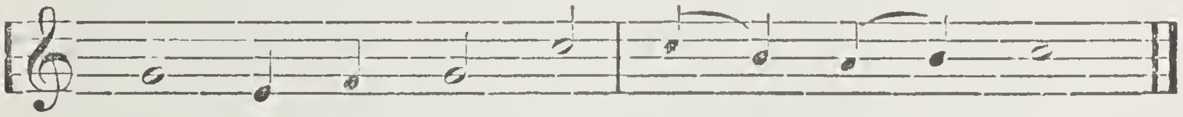
20 3. Explain the use of the figures $\frac{6}{8}$ and $\frac{4}{4}$, when written on the staff.

25 4. Write the corresponding number, letter, and syllable under each note of the following exercises:—

(*a*)



(*b*)



10 5. Explain the use of slurs in preceding exercises.

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JULY EXAMINATIONS, 1884.

INTERMEDIATE, THIRD AND SECOND CLASSES.

DRAWING.

Examiner—N. F. Dupuis, M.A.

No instruments are allowed except paper and pen or pencil.

Marks are to be allotted for neatness and accuracy of representation.

Values.

1. Draw a representation of the face of a chess-board,

6 (*a*) When looked at perpendicularly,

9 (*b*) When looked at obliquely.

2. Represent a pavement,

7 (*a*) Of regular hexagonal blocks;

11 (*b*) Of octagonal blocks and squares, and ornament the octagonal blocks.

3. Represent the following articles:—

9 (*a*) The dial of a clock, showing the time "ten minutes past five."

9 (*b*) A piece of a common chain, consisting of four links.

9 (*c*) A sphere resting upon the top of a cubical block, the top of the block being seen obliquely.

(*b*) *and* (*c*) *must be shaded.*

15 4. I wish to build an elevated horizontal platform, with a stair of three steps leading to it upon one side. The platform is to be surrounded by a railing which also borders the stair.

Make a perspective sketch for the workman.

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

SECOND CLASS TEACHERS.

ENGLISH LITERATURE.

Examiner—J. E. HODGSON, M.A.

NOTE—20 *per cent. of the total value* (150) *of this paper will depend on the literary form of the candidate's answers.*

Values.

1. " Th' applause of list'ning senates to command,
The threats of pain and ruin to despise,
To scatter plenty o'er a smiling land,
And read their history in a nation's eyes,

Their lot forbade: nor circumscrib'd alone
Their growing virtues, but their crimes confin'd;
Forbade to wade thro' slaughter to a throne,
And shut the gates of mercy on mankind,

The struggling pangs of conscious truth to hide,
To quench the blushes of ingenuous shame,
Or heap the shrine of luxury and pride
With incense kindled at the Muse's flame."

12 *(a)* Give in your own words the sense of these stanzas.

4 *(b)* To scatter plenty o'er a *smiling land*.
Expand this metaphor into a simile.

8 *(c)* State as clearly as you can the characteristics of poetic diction, as compared with prose.

2. " Some village Hampden, that with dauntless breast
The little tyrant of his fields withstood,
Some mute inglorious Milton here may rest,
Some Cromwell, guiltless of of his country's blood."

6 *(a)* Write brief biographical notes on the proper names.

4 *(b)* In an early copy of this stanza the names of three illustrious Romans were written in place of 'Hampden', 'Milton', 'Cromwell'. What names were they, and what is likely to have induced Gray to make the change?

[OVER

Values.

1 (*c*) 'little'. Give a synonym.

2 (*d*) 'Some Hampden', 'some Milton', 'some Cromwell'. What Figure of Speech?

3. Distinguish the meaning of the following readings, and state, with reasons, which you prefer:—

3 (*a*) "The curfew tolls the knell of parting day."
"The curfew tolls, the knell of parting day."

3 (*b*) "Here rests his head upon the lap of earth
A youth."
"Here rests, his head upon the lap of earth,
A youth."

3 (*c*) "He gave to misery (all he had) a tear"
"He gave to misery all he had, a tear."

4. Explain the italicized portions of the following lines:

2 (*a*) "No more shall rouse them from their *lowly bed.*"

3 (*b*) "No children run to *lisp their sire's return.*"

4 (*c*) "Where through the *long drawn* aisle and *fretted vault.*"

4 (*d*) "Can *storied* urn or *animated* bust?"

2 (*e*) "Or waked to ecstasy the *living lyre.*"

4 (*f*) "With *uncouth rhymes* and *shapeless sculpture deck'd.*"

4 (*g*) "To *meet the sun* upon the *upland lawn.*"

10 5. "Gray was a poet of a higher order than Goldsmith, and of an almost opposite kind of merit." Illustrate this criticism by instituting a comparison between the Elegy and the Traveller.

10 6. Explain and investigate the charge of 'political indifferentism' that has been brought against Goldsmith.

8 7. Quote from the Traveller an example of—(*a*) simile, (*b*) metaphor, (*c*) antithesis, (*d*) oxymoron.

8 8. Reproduce (quoting if possible) those lines in which are set forth the disadvantages of the French.

15 9. Write a brief account of the life of Burke. How do you reconcile the apparent inconsistency of his attitude towards the American and the French revolution respectively?

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

SECOND CLASS TEACHERS.

CHEMISTRY.

Examiner—N. F. DUPUIS, M.A.

Values.

6 1. Explain briefly what is meant by Atomicity or Valence, and give illustrations.

6 Write a list of Monatomic Elements.

5 2. Mention any differences between an acid and a base.

7 When these are brought together what substances are produced? Illustrate by an example.

5 × 2 = 10 3. Name the substances having the following chemical formulæ,

7 and give a short description of any one of them:

N_2O, HNO_3, NH_4NO_3, $HClO$, H_2SO_4.

10 4 In the burning of a candle, name the principal products, and describe any experiments which would establish your answer.

5 5. How is Chlorine obtained?

4 To what extent is it soluble in water?

5 What becomes of chlorine water by exposure to light?

6 6. Illustrate, symbolically, the action which takes place when Sulphur Dioxide and Hydric Sulphide are brought together.

6 Where does this occur in Nature?

8 7. What is the source, and what are the properties of Phosphorus?

5 Distinguish clearly between Yellow and Red Phosphorus.

4 When Phosphorus burns what is produced?

6 If the product of the combustion is put in water what is formed?

Education Department, Ontario

JULY EXAMINATIONS, 1884.

SECOND CLASS TEACHERS.

ENGLISH GRAMMAR.

Examiner—J. Dearness.

A. The present fray had turn'd my thoughts to muse
Upon old Æsop's fable, where he told
What fate unto the mouse and frog befel.
For language hath not sounds more *like* in sense,
Than are these chances, if the origin
And end of each be heedfully compar'd.
And as one thought bursts from another forth,
So afterward from that another sprang,
Which added doubly to my former fear.
For thus I reason'd: "These through us have been
So foil'd, with loss and mock'ry so complete,
As needs must sting them sore. If anger then
Be to their evil will conjoin'd, more *fell*
They shall pursue us, than the savage hound
Snatches the leveret, panting 'twixt his jaws."
—Dante's *Inferno* [*Cary's Translation*].

B. We are *but* too apt *to consider* things in the state in which we find them, without sufficiently adverting to the causes by which they have been produced and possibly may be upheld. . . . If, as I suspect, modern letters owe more than they are always willing to own to ancient manners, *so* do other interests which we value full as much as they are *worth*. *Even* commerce, and trade, and manufacture, the gods of our economical politicians, are *themselves* but effects, which, as first causes, we choose *to worship*.
—Burke's *Reflections*.

Values.	
15 2½ each	1. (*a*) Write the propositions, and state their kind and relation, of which the verbs are—(A) *told*, *be compar'd*, *snatches*; (B) *suspect*, (letters) *owe*, *do*.
7	(*b*) Write the detailed analysis of the propositions of which the verbs are: (B) *are* (apt), *are* (willing), *are* (effects).
32 2½ each	2. Parse the italicized words in (A) and (B).

[OVER

Values.

15 3. Supply the ellipsis in each of the following clauses or sentences:

2½ each (*a*) in (A) Than are these chances.
(*b*) in (B) So do other interests.
(*c*) " As first causes.
and (*d*) He was clever as a child, but stupid as a man.
(*e*) March came in as a lion, as usual.
(*f*) He had more money than he knew what to do with.

8 4. What is meant by saying of a verb that it is in the subjunctive mood? Give reasons for or against parsing *be compar'd* and *be conjoin'd* in (A) in the subjunctive mood.

8 5. Define a Preposition. Apply your definition to *'twixt* in (A).

6. Rewrite the following sentences, making corrections where necessary. Underline each correction. Give the reason for every change you make. Justify the apparently doubtful part of any sentence that you think correct.

6 (*a*) Although there is a greater number of boys than girls in the class yet one girl more than the boys have spoken loud enough for me to hear their answers.

6 (*b*) Some journals have hazarded conjecture as to whom the author of "The Bread-winners" was.

6 (*c*) That superficial scholar and critic like some renowned critics of our own, have furnished most decisive proofs of their ignorance of the Hebrew language.

3 (*d*) Thackeray's Virginians, one of the most elaborate, and exquisite pictures of English life a hundred years ago, that has ever been painted by pen or pencil.

6 (*e*) It is no wonder if such a man did not shine at the court of Queen Elizabeth; Elizabeth who was but another name for prudence and economy.

6 (*f*) They would say that the facts stated in the indictment would have been fully sufficient to have warranted the jury finding a verdict of guilty.

6 (*g*) Adam, the goodliest man of men since born
His sons; the fairest of her daughters, Eve.

Values.

7. Without assigning reasons, improve the construction of:

2 (*a*) Every one that boasts of riches is not rich.

2 (*b*) The beaux of that day used the abominable art of painting their faces as well as the women.

4 (*c*) I saw my old school-fellow again by mere accident when I was in London at the time of the first Exhibition, walking down Regent Street and looking in at the shops.

6 8. Indicate by accent marks, syllabication, and phonetic spelling (or the phonotypes used by Worcester) the pronunciation of: *quarantine, municipal, archetype.*

8 9. With the root *ced:* (go or yield) form four derivatives having respectively prefixes—*ad-*, *ante-*, *pro-*, *sub-*, and affixes— *-ory*, *-ent*, *-ure*, *-ion.* Give the literal signification of the derivatives.

10 10. Give the derivation and signification of the following words, from Burke's Reflections: *confiscation*, *indissoluble, quarantine, sycophant, cabal.* Two marks extra will be given for the history of each of the last three words .

(150 marks will be counted a full paper.)

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JULY EXAMINATIONS, 1884.

SECOND CLASS TEACHERS.

GEOGRAPHY.

Examiner—JAS. F. WHITE.

Values.

12 1. Give a short explanation of each of the following:—glaciers; the moon's phases; the length of a polar day; standard time; solar eclipses.

15 2. Draw a map of the Maritime Provinces, marking thereon the cities and chief towns, the mountains, the rivers, and the gulfs or bays.

9 3. Mention the chief articles of commerce supplied by Mexico, Newfoundland, Australia, and Brazil.

12 4. Describe a coasting trip
(*a*) From Amsterdam to Lisbon;
or, (*b*) From Halifax to Charleston;
noting the rivers, capes, islands, gulfs, bays, and cities on the way.

15 5. Discuss the commercial advantages of the Dominion of Canada.

12 6. Tell the situation and political relation of Aden, Mauritius, Batavia, Candia, Bremen, Hawaii, Soudan, and Macao.

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JULY EXAMINATIONS, 1884.

SECOND CLASS TEACHERS.

ALGEBRA.

Examiner—J. C. GLASHAN.

Values.

6 1. Show that

$$(x+y+z)^5 - x^5 - (y+z)^5$$

is exactly divisible by

$$x(y+z)(x+y+z).$$

2 2. Write down the factors of

$$x^3 - (a+b+c)x^2 + (ab+bc+ca)x - abc,$$

and apply your result to obtain the factors of

8 (*a*) $(a+b+c)(ab+bc+ca) - abc$;

8 (*b*) $2(a+b+c)^3 + (a+b+c)\{a(b+c)+b(c+a) + c(a+b)\} - (a+b)(b+c)(c+a)$.

10 3. If $3x = 2(q+r) - p, \quad 3y = 2(r+p) - q$

and $3z = 2(p+q) - r$

then shall $x^2 + y^2 + z^2 = p^2 + q^2 + r^2$

and $xy + yz + zx = pq + qr + rp$.

10 4. If $\dfrac{ax}{b-c} = \dfrac{by}{c-a} = \dfrac{cz}{a-b}$

then shall $ax + by + cz = 0$,

and $a^2x + b^2y + c^2z = 0$.

8 5. If $a = -\dfrac{1}{2}(1 - \sqrt{-3})$

then shall $\dfrac{1}{a} = -\dfrac{1}{2}(1 + \sqrt{-3})$,

and $a^3 + \dfrac{1}{a^3} = 2$.

[OVER

Values.

6. Solve

8 (a) $$\frac{4}{x-1}-\frac{1}{x-4}=\frac{9}{x-2}-\frac{6}{x-3};$$

8 (b) $$\left(\frac{x}{a}+\frac{x}{b}-1\right)\left(\frac{x}{a}-\frac{x}{b}+1\right)$$
$$+\left(\frac{x}{b}+\frac{x}{c}-1\right)\left(\frac{x}{b}-\frac{x}{c}+1\right)$$
$$+\left(\frac{x}{c}+\frac{x}{a}-1\right)\left(\frac{x}{c}-\frac{x}{a}+1\right)=1;$$

8 (c) $$(2x^2-2x+1)^2=(x-2)^2.$$

8 7. Solve the simultaneous equations

$$x^2-y^2=xy+1$$
$$x^2+y^2=2(xy+2).$$

8 8. A boy spends his money in oranges. Had he got five more for his money they would have averaged a cent each less, but had he got three less they would have averaged a cent each more. How much did he spend?

8 9. Find a number such that if it be divided into any two parts whatsoever, the square of one of these parts added to the other part will be equal to the square of the latter added to the former.

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

SECOND CLASS TEACHERS.

ARITHMETIC.

Examiner—J. A. McLellan, LL.D.

Values—15 *each question.*

1. Simplify—

$$\frac{(1\frac{1}{4} - 1{\cdot}002) \div (\frac{3}{4} - {\cdot}006)}{{\cdot}002 \div {\cdot}06} \times {\cdot}\dot{2}\dot{9}\dot{9} \times 3{\cdot}6.$$

2. A man mixes 28 lbs. black tea with 36 lbs. of an inferior quality, which cost 20 cents a pound less, and by selling the mixture at 58½ cents a pound, gained 20 per cent. Find the cost of each kind of tea.

3. When the temperature of a cube of zinc is raised from 32° F. to 212° F., each dimension is increased ·3 per cent. Find the percentage of increase in the bulk.

4. On a quantity of tea a grocer fixed a price to make a gain of 25 per cent., but ¼ of the quantity was found to have been damaged, and he had to reduce the price on this 25 cents a pound, and so his whole gain was 48⅓ per cent. less than the sum he had expected to gain. What price did he pay for the tea?

5. In a mile race between a bicycle and a tricycle their rates were as 5 to 4; the latter had half a minute's start and was beaten by 176 yards. Find the actual rate of each.

6. If 8000 metres be equal to 5 miles, and if a cubic fathom of water weigh 1344 lbs., and a cubic metre of water 1000 kilogrammes, find the ratio of a kilogramme to a pound avoirdupois.

7. A tradesman marks his goods at two prices, one for ready money and the other at a credit of six months. What is the ratio of these prices if money is worth 10 per cent.?

8. The external dimensions of a rectangular iron chest are 2 ft. 3 in., 1 ft. 8 in., 1 ft. 2½ in., and the sides, lid and bottom are one inch thick. Of how many cubic inches of iron is it formed?

9. What amount of American currency is equal to £500 14*s*. 6*d*., if gold is quoted at 15½, and the course of exchange is 489?

[OVER

10. A dealer has three prices for his goods—a year's credit price, a six month's credit price, and a cash price. The year's credit price is 35 per cent. in advance of cost, his six month's price is 6 per cent. off his year's credit price, and his cash price 10 per cent. off his year's credit price. At what advance on cost must he mark a six month's credit price on an article whose cash price is $12?

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

SECOND CLASS TEACHERS.

HISTORY.

Examiner—J. DEARNESS.

Values.	
9	1. "Rome had never been in such danger since quite the old times, and there can be no doubt that Sulla, who now saved Rome and crushed the Samnites and the Marian party, fixed the future history of the world far more than Cæsar or any one who came after him." State the cause, chief events and immediate results of the war in reference to which the foregoing statement is made.
6	2. Relate how Egypt became a Roman Province.
12	3. *(a)* Under the Norman and Angevin or Plantagenet lines of sovereigns, what languages were used by the court, clergy, and common people respectively? About what time did English become the language of the court? *(b)* Mention, with their authors, the principal writings that adorn English Literature in the reign of Elizabeth.
12	4. Write a concise account of the struggles of Charles I. with his parliaments.
12	5. Write a note on each of the following topics: The Council of Clarendon, Provisions of Oxford, The South Sea Scheme, The Corn Laws.
12	6. Explain the meaning of the following terms, as they are used in Canadian history, giving dates where you can: Seignorial Tenure, United Empire Loyalists, Family Compact, Secularization of the Clergy Reserves.
12	7. What are the principal provisions of the British North America Act (1867)?

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JULY EXAMINATIONS, 1884.

SECOND CLASS TEACHERS.

EUCLID.

Examiner—N. F. Dupuis, M.A.

Values. *(Commonly employed symbols will be allowed.)*

4 × 3 = 12 1. What is a Theorem, a Problem, an Axiom, a Postulate? Give examples.

8 2. Shew how to draw through a given point a straight line which shall be perpendicular to a given straight line.

8 If a line drawn from the vertex of a triangle to the middle of the base, be perpendicular to the base, the triangle is isosceles.

10 3. Define a parallelogram, and prove that its opposite sides are equal.

8 The diagonals of a parallelogram bisect each other.

10 4. If a straight line be bisected and also divided unequally, the rectangle under the unequal parts, together with the square upon the line between the points of section, is equal to the square upon half the line. (Euc. II. 5).

8 A, B, C is an isosceles triangle, with the angles at B and C equal. AD is a line from the vertex to the base, shew that $BA^2 - AD^2 = BD \cdot DC$, and examine the relation when D is a point in the base produced.

10 5. If a straight line be divided into any two parts, four times the rectangle under the whole line and one of the parts together with the square on the other part, is equal to the square upon the line made up of the whole line and that part. (Euc. II. 8.)

6 Shew that this proposition is the application of the Algebraic formula $(a+b)^2 - (a-b)^2 = 4ab$ to Geometry.

10 6. In any triangle the square on a side subtending an acute angle is less than the sum of the squares on the side containing that angle by twice the rectangle contained by one of these sides, and the line intercepted between the acute angle and the foot of the perpendicular let fall upon the side from the opposite angle. (Euc. II. 13.)

10 Two sides of a parallelogram are 8 and 10, and one diagonal is 14. Find the other diagonal.

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

SECOND CLASS TEACHERS.

NATURAL PHILOSOPHY.

Examiner—J. C. GLASHAN.

Values.

2 1. How are statical forces measured?

6 Explain clearly how a pressure can be completely represented by a straight line.

6 A downward pressure of 5 lbs. applied at the point P is represented by a straight line an inch and a quarter long, drawn from the point A from left to right. How would an upward pressure of 7 lbs. applied at P be represented?

8 2. Enunciate the parallelogram of force and the 'triangle of forces', and deduce the latter from the former.

12 Draw a diagram to represent three forces of 3, 5 and 7 units respectively, acting at the point P and in equilibrium. Draw the corresponding 'triangle of forces.'

6 3. Show how to determine the magnitude and the point of application of two forces acting on a rigid body along parallel lines.

10 ABCD is a square. A force of three pounds acts from A towards B; a force of four pounds from B towards C; a force of five pounds from D towards C; and a force of twelve pounds from A towards D. Determine the magnitude of the resultant.

8 4. Three parallel forces acting on a rigid body are in equilibrium. Prove that the moment of any one of them is equal and opposite to the algebraic sum of the moments of the other two.

10 A body B suspended from one end of a uniform lever of 4 lbs. weight, is balanced by a weight of one pound at the other end of the lever; but when the fulcum is removed through half the length of the lever, it requires 24 lbs. to balance B. Determine the weight of B.

8 5. Show how to determine the whole pressure which a liquid exerts on an immersed plane surface. [OVER

Values.

8 A rectangular flood-gate is 8 ft. wide and 6 ft. deep. What is the total pressure on it when the water is level with the top?

8 6. Describe the siphon, and explain the principles of its action.

8 Over what height can a liquid of specific gravity ·85 be carried by a siphon when the height of the barometer is 29·5 inches, the specific gravity of mercury being 13·6?

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

FIRST CLASS TEACHERS— GRADE C.

COMPOSITION.

Examiner—J. DEARNESS.

1. Improve the following sentences:—

(a). "The observance of the heavenly bodies must have been attended with great difficulties, before the telescope was discovered, and it is not to be wondered at if the investigations of astronomers were often unsatisfactory, and failed to produce complete persuasion under these disadvantages."

(b). "The quicksilver mines of Idria, in Austria, which were discovered in 1797, by a peasant, who, catching some water from a spring, found the tub so heavy that he could not move it, and the bottom covered with a shining substance which turned out to be mercury, yield, every year, over three hundred thousand pounds of that valuable metal."

(c). "This is a book which is short and amusing, which can be easily understood, which is admirably adapted to the purposes for which it is written; and which ought to be more popular than the last work which was published by the same author."

2. Translate the following passage into good prose:—

In the year's early nonage, when the sun
Tempers his tresses in Aquarius' urn,
And now towards equal day the nights recede,
Whenas the rime upon the earth puts on
Her dazzling sister's image, but not long
Her milder sway endures, then riseth up
The village hind, whom fails his wintry store,
And looking out beholds the plain around
All whiten'd, whence impatiently he smites
His thighs, and to his hut returning in,
There paces to and fro wailing his lot,
As a discomfited and helpless man;
Then comes he forth again and feels new hope
Spring in his bosom, finding e'en thus soon
The world hath changed its count'nance, grasps his crook,
And forth to pasture drives his little flock:
So me my guide dishearten'd when I saw
His troubled forehead, and so speedily

[OVER

That ill was cur'd; for at the fallen bridge
Arriving, towards me with a look as sweet,
He turn'd him back, as that I first beheld
At the steep mountain's foot.

—DANTE'S *Inferno.*

3. Write a composition on one of the following subjects:—
   - *(a).* Literary Style.
   - *(b).* English Parliamentary Oratory in the reign of George III.
   - *(c).* University Consolidation.
   - *(d).* The Political Destiny of Canada.

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

FIRST CLASS TEACHERS—GRADE C.

GEOGRAPHY.

Examiner—J. DEARNESS.

1. Describe British Columbia physically, politically, commercially. Refer, under their proper headings, to its area; latitude and longitude; climate; products of field, stream, and mine.

2. From what countries does Britain import wheat, cotton, and silk; Canada—sugar, raisins, olive oil, hemp, and india-rubber?

3. Draw a map of the Atlantic Ocean; trace on it the great equatorial current (part of which bears the name of the Gulf Stream). Mark the direction of the current by arrows. What causes produce this current; what conditions determine its direction?

4. Illustrate by diagrams the causes of spring and neap tides. Explain the statement that the tides have daily, monthly, and annual periods.

5. How is the general circulation of the atmosphere affected by differences in temperature and by the rotary motion of the earth?

6. Show how to reckon latitude by the sun at mid-day.

7. Where, and for what noted, are—Utrecht, Upsala, Charybdis, Esdraelon, St. Helena, Tel-el-kebir, Plymouth Rock, and Kilauea (Mouna Loa)?

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

FIRST CLASS TEACHERS—GRADE C.

ELEMENTARY MECHANICS.

Examiner—J. C. GLASHAN.

1. Show how to find the resultant of two uniform rectilinear motions compounded into a single motion.

The drops of a shower are falling straight down, but to a person sitting in a railway-carriage moving at the rate of $22\frac{1}{2}$ miles per hour, they appear to fall at an angle of 30° from the vertical. At what rate in feet per second are the drops falling?

2. If a body in motion be acted on by a constant force in its line of motion, what will be the effect on the motion during the time the force continues to act? What would be the effect on the motion if the force were suddenly to cease acting?

A body thrown vertically upwards returns to earth again in five seconds. How high did it rise, and what was its initial velocity?

Had the body been thrown at an angle of 60° elevation and returned to earth again in five seconds, what would have been the greatest height to which it would have attained, and what would have been its initial velocity?

3. State the Principle of Conservation of Energy. Explain fully how energy is measured.

Two weights whose masses are 10 and 6 respectively are connected by a weightless string passing over a smooth pulley. Find the kinetic energy of the system five seconds after the beginning of the motion, and obtain therefrom the acceleration of the common centre of gravity of the weights.

4. Deduce the Parallelogram of Forces from the Parallelogram of Velocities and the Laws of Motions.

At one of the angles of a regular hexagon forces are applied acting towards the other angles and proportional to the distances of these angles from the point of application. Determine the magnitude of the resultant.

4. Deduce the Principle of Moments (of a force about a point) from the Parallelogram of Forces.

A boy of weight W standing on one end of a rough plank of weight w and length l, walks slowly to the other end of the plank. Find the distance through which the common centre of gravity of the boy and the plank is displaced by this change of position.

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

FIRST CLASS TEACHERS—GRADE C.

HISTORY.

Examiner—J. DEARNESS.

NOTE—*Seven questions will be counted a full paper. Select any four of the first five questions, and any three of the last five.*

1. (*a*) Write a short paper on the Bill of Rights. Conclude it by showing how the adoption of the Bill restored to the monarchy the character and constitution "it had lost under the Tudors and the Stuarts."

(*b*). Show how the Mutiny Act and the system of granting supplies, adopted in 1689 and since continued, renders necessary the annual assembly of Parliament, and has thereby "brought about, in an indirect but perfectly efficient way, the greatest constitutional change which our history has witnessed."

2. Write a short history of the Grand Alliance, commencing with the circumstances that brought William to agree to the Peace of Ryswick, and concluding by showing to what extent the objects of the Alliance were attained by the Treaty of Utrecht.

3. Portray the character of Marlborough; give illustrative incidents from his life.

4. "It is no exaggeration to say that three of its (The Seven Years' War's) many victories determined for ages to come the destinies of the world." To which victories does Green refer; how may his statement be defended?

5. Write a sketch of the financial policy of the Younger Pitt. In passing, refer to the influence on Pitt of Adam Smith's writings, and to the condition of British industry and commerce in Pitt's time.

---

6. Review the history of the Irish forfeitures under William III. In what way did the particular mode of their resumption, adopted by the Commons, tend to subvert the constitution?

7. What limitations of the prerogative of the Crown were embodied in the Act of Settlement?

8. Enunciate, according to Hallam, the distinctive principles of the Whigs and Tories.

9. Discuss the substitution of septennial for triennial parliaments.

10. What abridgments of the personal authority of the Crown took place in the reigns of George I. and George II? State the causes of each.

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

FIRST CLASS TEACHERS—GRADE C.

ARITHMETIC.

Examiner—J. C. GLASHAN.

1. A gallon of water weighs 10 lbs.; a litre is equal to 1·761 pints, and a kilogram to 2·205 lbs. How many kilograms would a litre of water weigh?

2. A tradesman marks all his goods at an advance of $22\frac{1}{2}$ per cent. on cost. In selling he uses a yardstick an inch too short, and a pound-weight a quarter of an ounce light. In 43 per cent. of his sales, reckoned on their total value, the goods are measured with the short yardstick, in 36 per cent. they are weighed with the light pound-weight, and in the rest they are sold at the marked price independently of weight or of measure. What is the actual rate of profit on the whole of the sales?

3. Skilled workmen and labourers are employed on a work, a skilled workman receiving $1.75 per day more than a labourer. The average of their daily wages is $12\frac{1}{2}$ cents more than what it would be if skilled workmen and labourers were employed in equal numbers If 6 men of each kind were discharged, the average of the daily wages would be raised by 5 cents. Find the number of men of each kind employed?

4. The nearest approximate value in thousandths of a certain vulgar fraction is ·539, the numerator of the fraction is 187, what is its denominator?

5. Four men start together from the same point, and run in the same direction round a ring at different uniform speeds. The first runs at the rate of 10 miles, the second at the rate of $10\frac{3}{4}$ miles, the third at the rate of $11\frac{1}{8}$ miles, and the fourth at the rate of $12\frac{1}{4}$ miles, each per hour At what part of the ring will they be first all together again after starting?

6. The discount off a note drawn at 4 months is $10.50; the interest on the proceeds reckoned for the same time, and at the same per cent. as the discount, would be $10.20. Find the amount for which the note is drawn, and the percentage taken off as discount.

[OVER

7. Point off any number into periods of three figures each, beginning at the right. If the difference between the sum of the odd periods, numbering them from the right, and the sum of the even periods be divisible by 7 or by 13, the number itself will be divisible by 7 or by 13, as the case may be. *Prove this.*

8. The perimeter of a semi-circle is three yards, find its area in square feet.

9. Find the surface and the volume of a right circular cone, given the diameter of the base 174 inches, and the slant height 145 inches.

10. The areas of two regular polygons of the same number of sides, the one inscribed in a circle, the other described about it, are to each other as 3 to 4. Find the number of sides of the polygon.

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

FIRST CLASS TEACHERS—GRADE C.

ENGLISH LITERATURE.

Examiner—JAS. F. WHITE.

His *pupil age*
Man-enter'd thus, he *waxed like a sea;*
And, in the brunt of seventeen battles since,
He *lurch'd all swords of the garland.* For this last,
Before and in Corioli, let me say,
I cannot *speak him home:* he stopp'd the fliers;
And by his rare example made the coward
Turn terror into sport. As weeds before
A vessel under sail, so men obey'd
And fell below his stern: his sword, death's stamp,
Where it did mark, it took; from face to foot
He was a thing of blood, whose every motion
Was *tim'd with dying cries.* Alone he enter'd
The *mortal gate* of the city,—which he *painted*
With shunless destiny, aidless came off,
And with a sudden re-enforcement struck
Corioli like a planet. Now all 's his;
When, by and by, the din of war *'gan pierce*
His ready sense. Then *straight his doubled spirit*
Re-quicken'd *what in flesh was fatigate,*
And to the battle came he; where he did
Run reeking o'er the lives of men, as if
'Twere a perpetual spoil. —*Coriolanus*, . . .

(*a*) By whom, and at what stage of the play, is this spoken?

(*b*) Fully explain the parts in italics.

(*c*) Develop the comparisons in ll. 8-10; l. 17; l. 22.

(*d*) Scan ll. 4, 12, 14.

2. Write a paper on the condition of the Romans, as depicted in this play.

3. (*a*) Paraphrase—

"So our virtues
Lie in the interpretation of the time:
And power, unto itself most commendable,
Hath not a tomb so evident as a chair
To extol what it hath done."

[OVER

(*b*) Write explanatory notes on,

(1). "Your prattling nurse
Into a *rapture* lets her baby cry
While she *chats* him."

(2). "Then let the pebbles on the *hungry beach*
Fillip the stars."

(3). "Ay, as an ostler, that for *the poorest piece*
Will *bear the knave by the volume.*"

(4). "Leave this *faint puling*, and lament as I do,
In anger, *Juno-like.*"

4. "Europe, undoubtedly, taken in a mass, was in a flourishing condition the day on which your revolution was completed. How much of that prosperous state was owing to the spirit of our old manners and opinions it is not easy to say."

According to Burke, what was the origin, what the influence, and what the state of 'manners' in France and in England respectively, at the time of which he writes? What evils does he anticipate from the loss of these 'manners'? To what extent have his views been realized?

5. Quote from the "Elegy" passages similar in sentiment or in expression to these:---

(*a*) "Like roses that in deserts bloom and die."---*Pope.*

(*b*) "Yet in our ashen cold is fire yreken."---*Chaucer.*

(*c*) "Ah, me! what boots us all our boasted power,
Our golden treasure, and our purple state;
They cannot ward the inevitable hour,
Nor stay the fearful violence of fate."---*West.*

How would you defend Gray against the charge of plagiarism in these cases?

6. "The Elegy may be looked upon as the typical piece of English verse, our poem of poems, . . . because it combines all the qualities that go to the production of a fine poetic effect." ---*Gosse.*

Estimate this criticism, explaining what are the 'qualities' here alluded to. Quote, or refer to, parts of the poem in illustration.

7. Tell what Goldsmith has said of France and of England.

Give an estimate of his style. Introduce quotations where you can.

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

FIRST CLASS TEACHERS—GRADE C.

EUCLID.

Examiner—J. A. McLELLAN, LL.D.

1. "Magnitudes which exactly coincide with one another are equal." "Magnitudes which coincide with one another, that is, exactly fill the same space, are equal to one another."

Which of these modes of stating the axiom do you prefer, and why?

Write a short note on the application of the principle of superposition, illustrating your remarks by reference to a proposition in Book III.

2. The sum of all the interior angles of a triangle is equal to two right angles.

(1) What are the regular figures whose angles can be used to fill up the space round a point in a plane.

(2) If n represent the number of sides of a polygon, the sum of its interior angles is $2(n-2)$ right angles.

3. Triangles on the same base and between the same parallels are equal.

BC, the base of a triangle ABC is produced to D, construct on BD a triangle equal in area to ABC.

4. In any right-angled triangle the square described on the side opposite the right angle is equal in area to the sum of the squares described on the sides containing the right angle.

(1) Construct a square equal to half a given square.

(2) Construct a square equal to the difference of two given squares.

5. Describe a square which shall be equal to a given rectilenial figure.

Divide a straight line into two parts, such that their rectangle may be equal to a given square.

6. The opposite angles of any quadrilateral figure inscribed in a circle are together equal to two right angles.

[OVER

7. To inscribe a circle in a given triangle.

Having given the hypothenuse of a right angled triangle, and the radius of the inscribed circle, it is required to construct the triangle.

8. If a straight line be drawn parallel to one of the sides of a triangle, it shall cut the sides, or the sides produced, proportionally and conversely.

Apply this to trisect the diagonal of a parallelogram.

9. Similar triangles are to one another in the duplicate ratio of their homologous sides.

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

FIRST CLASS TEACHERS—GRADE C.

ENGLISH GRAMMAR.

Examiner—J. E. HODGSON, M.A.

1. Enumerate the essentials of a perfect alphabet, and state in what respects ours is imperfect. How are its imperfections overcome?

Exemplify your answer as fully as you can.

2. Classify words, and assign to each class the parts (or part) of speech belonging to it.

Mor. Mislike me not for my complexion,
The shadow'd livery of the burnish'd sun,
To whom I am a neighbour, and near bred.
Bring me the fairest creature northward born,
Where Phœbus' fire scarce thaws the icicles,
And let us make incision for your love,
To prove whose blood is reddest, his or mine.
I tell thee, lady, this aspect of mine
Hath fear'd the valiant: by my love, I swear
The best regarded virgins of our clime
Have lov'd it too: I would not change this hue,
Except to steal your thoughts, my gentle queen.
Por. In terms of choice I am not solely led
By nice directions of a maiden's eyes;
Besides, the lottery of my destiny
Bars me the right of voluntary choosing:
But, if my father had not scanted me,
And hedg'd me by his wit, to yield myself
His wife who wins me by that means I told you,
Yourself, renowned prince, then stood as fair
As any comer I have look'd on yet
For my affection.

(a) Analyze from "But if" to "affection."

(b) Parse—northward, mine (aspect of mine), queen, me (bars me), right, wife, stood, comer.

(c) Give the derivation of—livery, neighbour, nice, incision, aspect, valiant, choice, renowned.

(d) Point out and explain the Figures of Speech in the extract.

(e) Write out the speech of Morocco in the form of oblique narration.

[OVER

4. State rules for the use of shall and will in *(a)* declarative, *(b)* interrogative sentences.

5. Expand the following metaphors into their corresponding similes :—

(*a*) "Hide me under the shadow of Thy wings."

(*b*) "Contentment is the poor man's bank."

(*c*) "Fine pictures are the hymns of painters addressed to the sense of sight."

6. Write notes on gender, in connection with—songstress, malster, girl, widower.

7. In the expression, "The more the merrier," the first "the" is relative, the second is demonstrative. Explain.

8. "For *all* our sakes, it haunts my thoughts *waking* and sleeping."

Parse the words in italics.

9. Distinguish—abandoned, deserted; ambiguous, equivocal; benevolent, beneficent; argument, reason, proof; candid, sincere; chasten, chastise; patient, submissive; pitiful, merciful; simulation, dissimulation; taste, genius.

10. Correct any errors in the following :—

(*a*) No one come to my assistance, apparently not being aware of my misadventure.

(*b*) The name of John Flaxman is among the most distinguished of British sculptors.

(*c*) The unwary traveller stumbles to rise no more.

(*d*) The chain of artistic descent does indeed lose itself in the fountain head of art.

(*e*) Their unimpeachable veracity has occasionally been disputed.

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

FIRST CLASS TEACHERS—GRADE C.

ALGEBRA.

Examiner—J. A. McLELLAN, LL.D.

NOTE—*Ten questions will constitute a full paper.*

1. Divide $x^5 - 5qx + 4r$ by $(x - m)^2$.

Find the relation between q and r, in order that the remainder may vanish.

2. When is any expression symmetrical with respect to two or more of the letters it involves?

(1). Find the square root of $3\{(a + b + c + d)^2 + (b + c + d + e)^2 + (c + d + e + a)^2 + (d + e + a + b)^2 + (e + a + b + c)^2 - (a^2 + b^2 + c^2 + d^2 + e^2)\}$.

(2). Simplify

$$\frac{(a-b)^2-(b-c)^2}{a^2+ab-bc-c^2}+\frac{(b-c)^2-(c-a)^2}{b^2+bc-ca-a^2}+\frac{(c-a)^2-(a-b)^2}{c^2+ca-ab-b^2}.$$

3. Shew that $(x - a)^{12} - x^6a^6 + (x^2 - ax + a^2)^2$ is exactly divisible by $x^3 - 2ax^2 + 2a^2x - a^3$.

Find the factors of $(a^2 - b^2)^5 + (b^2 - c^2)^5 + (c^2 - a^2)^5$.

4. Show how to extract the square root of a quantity of the form $a + b\sqrt{-1}$.

(1). Find the square root of $-3 - \sqrt{-16}$.

(2). Shew that one of the fourth roots of -64 is $2(1 + \sqrt{-1})$.

5. Solve the equations $ax + by = c$, $a'x + b'y = c'$.

Interpret the result when $\dfrac{a}{a'} = \dfrac{b}{b'} = \dfrac{c}{c'}$.

6. Solve the equations:

(1). $$\frac{ax+b}{a+bx}+\frac{cx+d}{c+dx}=\frac{ax-b}{a-bx}+\frac{cx-d}{c-dx}.$$

(2). $$\frac{x}{b+c}+\frac{y}{c-a}=a+b.$$

$$\frac{y}{c+a}+\frac{z}{a-b}=b+c.$$

$$\frac{z}{a+b}+\frac{x}{b-c}=c+a.$$

[OVER

7. Find the relation between the roots and co-efficients of the equation $x^2 + px + q = 0$.

If the difference of the roots of the equation $x^2 - (m - a)x + b^2$ is equal to the difference of the roots of the equation $x^2 + (m - b)x + a^2$, shew that $2m = 5(a + b)$.

8. Prove that $\dfrac{a-b}{1+ab} + \dfrac{b-c}{1+bc} + \dfrac{c-a}{1+ca} = \dfrac{a-b}{1+ab} \cdot \dfrac{b-c}{1+bc} \cdot \dfrac{c-a}{1+ca}$.

9. Solve the equations

(1).
$$x^3 + y^3 = a$$
$$xy(x + y) = b.$$

(2).
$$\begin{cases} (x^3 + x^2y + xy^2 + y^3)(x + y) = a \\ (x^3 - x^2y + xy^2 - y^3)(x - y) = b. \end{cases}$$

(3).
$$\sqrt[3]{x + \sqrt{2}} + \sqrt[3]{x - \sqrt{2}} = \sqrt{2}.$$

10. Show that if the arithmetical and geometrical means of two quantities be given, the quantities themselves may be found, and give expressions for them.

(1). Sum the series $1 - \dfrac{2}{m} + \dfrac{1}{m^2} - \dfrac{2}{m^3} + \dfrac{1}{m^4} -$ &c., *ad inf.*

(2). Shew that the sum of n terms of the series $1 + 3 + 7 + 15 + \ldots\ldots + (2^n - 1)$ is $2^{n+1} - (n + 1)$.

(3). Write down four terms of the series whose n^{th} term is
$$\frac{4n^2 - 1}{4n^2 + 1}.$$

11. The number of combinations of $n + 1$ things 4 together is 9 times the number of combinations of n things 2 together; find n.

12. Show that there are only $n + 1$ terms in the expansion of $(1 + x)^n$ when n is a positive integer.

(1). Write nown the 5^{th} term of $(1 - x)^{-\frac{2}{3}}$.

(2). Write down the middle term of $(1 + x)^{2n}$.

Education Department, Ontario

JULY EXAMINATIONS, 1884.

FIRST CLASS TEACHERS—GRADE C.

HEAT AND HYDROSTATICS.

Examiner – N. F. DUPUIS, M.A.

1. Distinguish between *heat* and *temperature*.

"It requires more heat to melt a pound of ice than to melt a pound of iron." Explain this statement.

2. What does a thermometer measure directly, and what does it measure inferentially?

3. State the difference between the centigrade and Fahrenheit scales.

The zero mark upon a centigrade thermometer is found to be $1\frac{1}{2}°$ too high while the 100° is correct. Change 60° as marked by this thermometer into the correct Fahrenheit reading.

4. Explain the meaning of the terms "absolute zero" and "absolute temperature."

100 c.c of air at 35°C has its temperature raised to 240°C, and it is allowed to expand freely. Find its volume.

What would be the result if the air were not allowed to expand, and in which case would the greater amount of heat be required?

5. "The potential (*latent*) heat of water is 79°C." Explain clearly what this means.

10 grams of ice at 0°C are dissolved in 100 c.c of water at 40°C. Find approximately the resulting temperature, supposing no exchange of heat to take place between the vessel and surrounding objects.

6. What is the mechanical equivalent or mechanical unit of heat?

A lead ball is allowed to fall from a height of 1000 feet. If all the heat produced by striking the earth were collected in the ball, how many degrees would its temperature be raised, the specific heat of lead being .0314?

7. State the evil effect of changes of temperature upon the going of a clock, and explain any method by which this effect is got rid of.

[OVER

8. The gate of a lock is 20 feet wide and the water is 16 feet deep. Find the total pressure in pounds upon this gate. Also find the position of the centre of pressure.

9. A body A, weighing 3 pounds, is fastened to a piece of lead weighing 8 pounds, and having a specific weight 11·3; the whole weighs 7 pounds under water. Find the specific weight of the body A.

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

FIRST CLASS TEACHERS—GRADE C.

CHEMISTRY.

Examiner - N. F. DUPUIS, M.A.

1. State Avogadro's Law, and explain how it enables us to calculate the specific weight of a gas.

Under the light of this law, prove that air, on account of its specific weight, must be a mixture.

2. Theoretically, what is produced by each of the following substitutions in the water molecule:—

(*a*) Replacing half the hydrogen by a metal?
(*b*) Replacing half the hydrogen by a non-metallic group?
(*c*) Making the substitutions (*a*) and (*b*) at the same time?

3. If a mixture of equal parts of Hydrogen, Oxygen and Carbon Dioxide be passed through a long porous tube, what will be the character of the mixture at exit?

Describe any action similar to the above going on in the Animal Organism.

4. A piece of paper dipped in a solution of Potassic Iodide and Starch, and dried, turns blue when exposed out of doors. Explain the cause, and name any other substances which would cause it to turn blue.

5. Explain the difference between the red rust of iron and the black scales found about a forge.

Which would give Oxygen if heated, and what proportion by weight of the whole would it give? ($Fe = 56$).

6. What is the average composition of gunpowder? What is the cause of the explosive force?

7. Three grams of dilute hydrochloric acid are poured upon marble and the escaping gas is passed into a solution of Lead Acetate The precipitate weighs two grams when dried. Find the percentage of pure acid (HCl) in the sample employed. ($Pb = 207$.)

8. Give the general constitution of an *Alum*, and particular formulæ for two alums in common use.

Alum acts as a *mordent* in dyeing. Explain how.

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

FIRST CLASS PROFESSIONAL EXAMINATION.

HISTORY OF EDUCATION.

1. "Take a boy from the top of a grammar school, and one of the same age, bred as he should be in his father's family, and bring them into good company together, and then see which of the two will have the more manly carriage, and address himself with the more becoming assurance to strangers."

(*a*) State and discuss Locke's views regarding the comparative merits and demerits of public and private tuition.

(*b*) On what grounds does he discourage the practice of making children 'commit passages to memory'? Give your own opinion on the utility of this practice.

2. Write a note describing and criticizing Pestalozzi's methods of teaching language lessons.

3. "It is clear that in whatever matters it is our duty to act, those matters also it is our duty to study."—*Dr. Arnold.*

State your views on this canon, as regards the study of Education.

4. Sketch the systems of teaching advocated by Roger Ascham and Jacotot respectively.

5. "Our lessons ought to start from the concrete, and end with the abstract."—*H. Spencer.*

How does Mr. Spencer support this opinion?

6. What is meant by "The Antithesis between Words and Things"?

7. "The long continued success of this book (Mangnall's Questions) is a melancholy proof of the stupidity which is at work, vigorously destroying the intelligence of youthful minds." Explain as fully as you can.

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

FIRST CLASS PROFESSIONAL EXAMINATION.

EDUCATION—SECOND PAPER.

1. "There is a well marked order in the growth of intellect."

Give a summary of the order of growth (or development) here referred to.

2. Give the substance of Bain's remarks

(1) On *Discrimination* as the foundation of intellect,

(2) On the conditions favourable or unfavourable to the exercise of Discrimination.

3. Discuss briefly the following :—

(1) *Attention :* its nature, objects, effects ; degree of.

(2) Voluntary and Non-Voluntary Attention and their Laws.

4. What distinct heads, according to Bain, are comprised in the "Analytical or Logical Sequence of Teaching"? Give illustrations.

5. What does Bain regard as "some of the real uses of Grammar"? Remark on his view of the use of a text-book.

6. What is the relation of Willing to Knowing and Feeling?

"To understand the nature of Willing we must understand that of *desire*". Give illustrations of this proposition.

7. Briefly discuss the *Moral Sentiment* under the following heads :—

(1) Peculiarities of,
(2) Origin,
(3) Growth,
(4) Relation to the Religious Sentiment.

NOTE—*Candidates may select any five of the above questions.*

Education Department, Ontario.

JULY EXAMINATIONS, 1881.

FIRST CLASS PROFESSIONAL EXAMINATION.

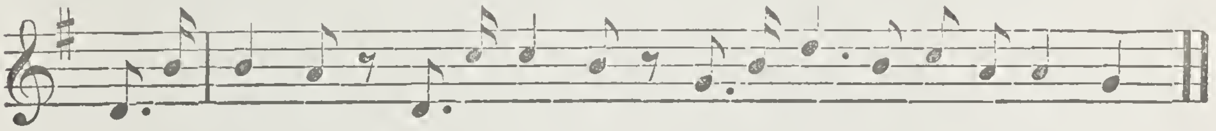
MUSIC.

1. Write the scales of D major and F major in notes.

2. Write an example of a time signature and of a key signature, and explain use.

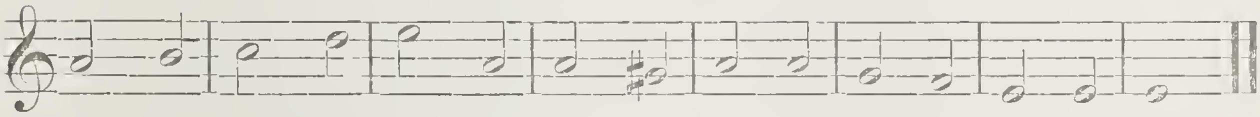
3. What is the difference between the Chromatic and Diatonic Scales?

4. Supply bars and time signature to the following exercise:—

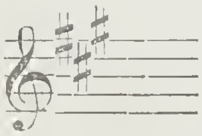


Transpose the preceding exercise to the key of A major.

5. Add three lower parts (in alto, tenor and bass cleft) to the following subject, using any harmonies you like:—



6. The following signature is used for the major key of A, and the minor key of F sharp:—



How would you proceed, in order to determine in which of these two keys a piece of music was written?

7. Give synopsis of a first lesson to a class of very young children.

Education Department, Ontario

JULY EXAMINATIONS, 1884.

FIRST CLASS PROFESSIONAL EXAMINATION.

DRAWING.

1. Draw an upright square prism -- base, 1 inch; height, 2 in. Within it represent a square pyramid, having for the diagonals of its base the diameters of the prism.

2. Dictate directions for drawing a quatrefoil on the sides of a square, drawn on its diagonals. Draw the quatrefoil.

3. Distinguish between (*a*) light, (*b*) shade, (*c*) shadow. Illustrate by a drawing.

4. Represent a cylinder 2 inches long and about 1 inch in diameter, below the line of sight or centre of vision, in the following positions:—

   (*a*) Immediately in front of spectator, axis vertical.
   (*b*) A little to the right of spectator, axis horizontal.
   (*c*) A little to the left of spectator, axis oblique.

5. Height of spectator, 5 feet; distance, 10 feet; scale, one-quarter of an inch to a foot.

Draw a perspective representation of a block of steps, having four risers and four treads, each being 1 foot: length of block 4 feet. The block touches the foreground or perspective plane: the steps face the line of direction.

6. Define the following:—

   (*a*) Parallel Perspective.
   (*b*) Line of Direction.
   (*c*) Centre of Vision.

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

FIRST CLASS TEACHERS—Grades A and B.

ADDISON, POPE, WORDSWORTH, MACAULAY.

Examiner—Jas. F. White.

1. Shew the relations existing, during Addison's time, between literature and politics. Give some account of the several publications with which he was connected.

2. From *each* of the two divisions, (I). Manners, Fashions, Humours; (II). Tales and Allegories, reproduce the contents of that paper which you deem of the greatest merit.

3. "Proud as Apollo on his forked hill,
Sate full-blown Bufo, puff'd by ev'ry quill;
Fed with soft Dedication all day long,
Horace and he went hand and hand in song.
His library, where busts of poets dead
And a true Pindar stood without a head,
Receiv'd of wits an undistinguish'd race,
Who first his judgment ask'd, and then a place:
Much they extoll'd his pictures, much his seat,
And flatter'd ev'ry day, and some days eat:
Till grown more frugal in his riper days,
He paid some bards with port, and some with praise,
To some a dry rehearsal was assign'd,
And others, harder still, he paid in kind.
Dryden alone (what wonder?) came not nigh,
Dryden alone escap'd this judging eye:
But still the great have kindness in reserve,
He help'd to bury whom he help'd to starve."

—*Prologue.*

(*a*) Estimate the correctness of this portrait.

(*b*) Give notes on the proper names. Explain ll. 1, 4, 14, 18.

(*c*) What models did Pope have before him in writing satire? In what respects does he differ from them?

4. "His (Pope's) whole satire is pitched in a key which good taste is compelled to disown. Of this fault there were two principal causes; one in the manners of the age, the other in the temperament of the poet."—*Pattison.*

Write a paper in explanation of these causes.

[OVER

5. “The world is too much with us; late and soon,
Getting and spending, we lay waste our powers:
Little we see in Nature that is ours;
We have given our hearts away, a sordid boon!
This Sea that bares her bosom to the moon;
The Winds that will be howling at all hours,
And are upgathered now like sleeping flowers;
For this, for everything, we are out of tune;
It moves us not. Great God! I’d rather be
A Pagan suckled in a creed out-worn,
So might I, standing on this pleasant lea,
Have glimpses that would make me less forlorn;
Have sight of Proteus rising from the sea;
Or hear old Triton blow his wreathed horn.”

(*a*) Write explanatory notes on ll. 3, 5, 6, 8, 10, 13, 14.

(*b*) Justify the simile in l. 7.

6. Describe Wordsworth’s method of observing and depicting nature. Illustrate by reference to the sonnets.

7. Briefly compare the prose styles of Addison and Macaulay, and the poetry of Pope and Wordsworth, showing the particular excellences and the defects of each writer.

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

FIRST CLASS TEACHERS—GRADES A AND B.

ANALYTICAL GEOMETRY.

Examiner—N. F. DUPUIS, M.A.

1. Interpret the equations

(a). $x=a$ (c). $x^2+y^2=1$ (e). $\theta=a$.
(b). $x=y$ (d). $x^2-y^2=1$ (f). $\rho=c$.

2. State the condition that two straight lines may be at right angles to one another.

Find the straight line through the point, (3, 2) and perpendicular to the straight line joining (1, −4) and (−2, 3).

3. Deduce the condition that three straight lines may have a common point, and express it in determinant notation.

Find the value of m, so that the lines $y=mx+\frac{3}{2}$, $y=2x-3$, $y=-x+2$ may have a common point.

4. State the conditions under which the general equation

$$ax^2+by^2+2hxy+2gx+2fy+c=0$$

referred to rectangular co-ordinates, may denote (a) a circle, (b) a parabola, (c) two straight lines.

5. A circle makes intercepts α, α' and β, β' upon rectangular axes. Determine its equation.

6. A straight line cuts a parabola, whose vertex is A, in P and Q, and the axis of the parabola in L. PM and QN are perpendiculars upon the axis. Prove that AM.AN $=$ AL².

7. The lines drawn from the foci to any point in an ellipse make equal angles with the tangent at that point. Prove it.

Is this property true for any conic?

8. The line $y=mx+\sqrt{b^2+a^2m^2}$ touches the ellipse $a^2y^2+b^2x^2-a^2b^2=0$.

9. The equation to any conic being,

$$y^2=2px(e+1)+x^2(e^2-1).$$

Where e is the eccentricity, show that the equation to the asymptotes is

$$y=x\sqrt{e^2-1},$$

and thence that the hyperbola is the only conic having real asymptotes.

10. If a tangent be drawn to a hyperbola the portion intercepted between the asymptotes is bisected at the point of contact.

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

FIRST CLASS TEACHERS—GRADES A AND B.

ENGLISH LANGUAGE AND HISTORY OF ENGLISH LITERATURE.

Examiner—J. C. GLASHAN.

1. What are the chief differences between the English of Caxton and Modern English?

2. "They may talk as they will of the dead languages. Our auxiliary verbs give us a power which the ancients, with all their varieties of mood and all their inflections of tense, never could attain."

Explain and illustrate.

3. Write short notes on the substantive-formatives, -th, -ing, -ling, -ness, -dom, -hood, -kind, -rick, -red, -ship; and on the etymology of the words in italics in the following—'with *might* and *main*,' 'in good *faith*', 'by *field* and *flood*', '*wind* and *weather*', 'from *stem* to *stern*', 'with *mirth* and *jollity*' *sweetheart*, *wilderness*, *livelihood*.

4. Write short notes on the grammatical peculiarities of the following:—

"And he saide to hem, Come ye after me and I shal make you to be maad fisheris of men. And anon her nettis forsakyn they sueden hym."

"Blessid be thei that suffren persecucioun for rightwisnesse, for the kyngdam of heuenes is heren."

"And thei soughten for to holde him, and thei dreden the cumpanye of peple; sothli they knewen for to hem he seide this parable; and him left, thei wenten away."

"Seke ye scripturis in which ye gessen to haue euerlastinge lyf; and tho it ben, that beren witnessing of me."

5. Fully explain the following:

"I am a sotherne man,
I cannot geste *rom, ram, ruf* by my letter,
And, God wote, rime hold I but litel better;
And therfore if yow list I will not glose
I wol you tell a litel tale in prose."

6. Write short notes on any five, but not more than five, of the

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following: Lydgate's "Storie of Thebes", Occleve's "De Regimine Principum", Daniel's "Civil Wars", Drayton's "Polyolbion", Spenser's "Faerie Queene", Udall's "Ralph Roister Doister", More's "Utopia", Sidney's "Arcadia", Bacon's "Advancement of Learning", Hooker's "Ecclesiastical Politie".

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

FIRST CLASS TEACHERS—GRADES A AND B.

ALGEBRA.

Examiner—J. A. McLELLAN, LL.D.

1. Find all the rational factors of

(1). $x^4 + y^4 + (x+y)^4$.
(2). $(a-b)(1+bc)(1+ca)$ + anal + anal.
(3). $(x+y+z)^5 - (x^5+y^5+z^5)$.

Apply the result of (1)

(a) To prove

$$\{(a-b)^2+(b-c)^2+(c-a)^2\}^2 = \tfrac{1}{2}\{(a-b)^4+(b-c)^4+(c-a)^4\}.$$

(b) To solve the equation $\dfrac{1+x^4}{(1+x)^4} = 3\tfrac{1}{2}$.

2. If a, b, c are the roots of the equation $x^3 - px^2 + qx - r = 0$, determine the equation whose roots are a^2, b^2, c^2.

3. If any rational integral function of x of the n^{th} degree vanishes for more than n different values of x, then each of the co-efficients must vanish.

Expand $a^x(1-x)$ in a series of ascending powers of x.

4. Assuming the truth of the Binomial Theorem for a positive integral index, prove it for a fractional index.

(1). Find the remainder after n terms of the expansion of $(1-x)^{-2}$.

(2). Sum to infinity the series

$$1 + \frac{1+x}{1\cdot 2} + \frac{(1+x)(1+2x)}{1\cdot 2\cdot 3} + \frac{(1+x)(1+2x)(1+3x)}{1\cdot 2\cdot 3\cdot 4} + \text{\&c.}$$

5. Find the co-efficient of x^4 in the expansion of $(1+x-2x^2)^{-3}$, and the number of terms in the expansion of $(a+b+c+d)^5$.

6. If $\dfrac{Pn}{qn}$ be the n^{th} convergent to a continued fraction, prove

$$P_n = a_n p_{n-1} + p_{n-2}.$$
$$q_n = a_n q_{n-1} + q_{n-2}.$$

(1). If $\dfrac{p_1}{q_1}$, $\dfrac{p_2}{q_2}$, $\dfrac{p_3}{q_3}$ be successive convergents to a continued fraction, then $\dfrac{p_3 - p_1}{q_3 - q_1} = \dfrac{p_2}{q_2}$.

(2). Change $\sqrt{n^2+1}$ into a continual fraction.

(3). Approximately find root of $x^2 - 24x - 3 = 0$.

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7. (1) Find the n^{th} term, and the generating function of the series $2 + 7x + 25x^2 + 91x^3 + 337x^4 + \&c.$

(2) And the general terms of the series

$$x + x^2 + x^4 + x^7 + x^{11} + \&c.$$

8. Sum to n terms the series

(1). $1^4 + 2^4 + 3^4 + \&c.$

(2). $1{\cdot}3{\cdot}5 + 2{\cdot}4{\cdot}6 + 3{\cdot}5{\cdot}7 + \&c.$

(3). $\dfrac{1}{1{\cdot}5{\cdot}9} + \dfrac{1}{5{\cdot}9{\cdot}13} + \dfrac{1}{9{\cdot}13.17} + \&c.$

9. Shew that the value of a determinent is not altered if the rows are changed into corresponding columns, and *vice versa.*

Evalutate

(1).
$$\begin{vmatrix} (b+c)^2 & a^2 & a^2 \\ b^2 & (c+a)^2 & b^2 \\ c^2 & c^2 & (a+b)^2 \end{vmatrix}$$

(2).
$$\begin{vmatrix} a & b & c \\ \alpha & \beta & \gamma \\ x & \gamma & z \end{vmatrix} \times \begin{vmatrix} a' & b' & c' \\ \alpha & \beta & \gamma \\ x & y & z \end{vmatrix}$$

10. Solve

(1). $\dfrac{1}{x+a} + \dfrac{1}{x+b} + \dfrac{1}{x+c} + \dfrac{1}{x+a+b-c} = 0.$

(2). $\sqrt[3]{(1+x)^2} - \sqrt[3]{(1-x)^2} - \sqrt[3]{(1-x^2)} = 0.$

(3). $\dfrac{1+x}{1-y} + \dfrac{1+y}{1-x} = a,\ \dfrac{1+x}{1+y} + \dfrac{1-y}{1-x} = b.$

11. If $s = a + b + c$, $\sigma = x + y + z$, then

$$2\{3(ax + by + cz - s\sigma\}\{3(bx + cy + az) - s\sigma\}\{3(cx + ay + bz) - s\sigma\}$$
$$= (3a - s)(3b - s)(3c - s)(3x - \sigma)(3y - \sigma)(3z - \sigma) +$$
$$27(a - b)(b - c)(c - a)(x - y)(y - z)(z - x).$$

12. (1) If $ax^2 + bx + c = 0$, and $a'x^2 + b'x + c' = 0$, prove

$$(ac' - a'c)^2 - (ab' - a'b)(bc' - b'c = 0.$$

(2) Eliminate x from $\begin{cases} 2x^3 - 3x^2y + 4xy^2 - 52 = 0. \\ 3x^3 - 4x^2y + 5xy^2 - 66 = 0. \end{cases}$

(3) Eliminate x, y, z from

$$\begin{cases} \left(\dfrac{a}{x}\right)^m + \left(\dfrac{b}{y}\right)^m + \left(\dfrac{c}{z}\right)^m = 1. \\ x^n + y^n + z^n = d^n. \\ \dfrac{a^m}{x^{m+n}} = \dfrac{b^m}{y^{m+n}} = \dfrac{c^m}{z^{m+n}}. \end{cases}$$

NOTE—*Ten questions considered a full paper.*

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

FIRST CLASS TEACHERS—GRADES A AND B.

ANCIENT HISTORY AND GEOGRAPHY.

Examiner—J. E. HODGSON, M.A.

NOTE—*Five questions constitute a full paper, but of the five, Nos. 2, 5 and 6 must be three.*

1. Sketch briefly the leading events of the struggle between the Greeks and the Persians, from "Marathon" to "Mycale".

2. State the immediate and the remote causes of the Peloponnesian War.

Give a short account of the Sicilian Expedition.

3. Enumerate, with dates, the battles of the Second Punic War, giving the names of the Roman generals and the result of each engagement.

4. Write short notes on—(*a*) The Gracchi, (*b*) Catiline, (*c*) Cicero, (*d*) Julius Cæsar.

5. Make a comparison between Athens and Rome in their palmy days, regarding—(*a*) Religion, (*b*) Letters, (*c*) Commerce, (*d*) Colonization.

6. Give the situation of, and cite a historical circumstance connected with—Thermopylae, Ithome, Actium, Ægina, Artemisium, Gyaros, Pistoria, Ravenna, Minturnae, Heraclea, Pompeii, Canusium.

7. Give in proper order the ancient names of the waters through which a vessel would pass on a voyage from Genua to Trapezus, touching at Tarentum, Corinth, Athens, and Thessalonica.

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JULY EXAMINATIONS, 1884.

FIRST CLASS TEACHERS—GRADES A AND B.

GEOMETRICAL OPTICS.

Examiner—N. F. DUPUIS, M.A.

1. Explain fully what is meant by the terms—*angle of incidence, index of refraction, critical angle.*

2. Give the complete law of refraction.

Explain why a stick thrust obliquely into water appears to be broken at the surface of the water.

3. What is a focus? What are conjugate foci? What is the principal focus?

Where is the principal focus of a sphere of glass ($\mu = 1.52$), of 3 inches in diameter?

4. If r, r' be the radii of curvature of the surfaces of a lens; D, d, the distances of the foci from the centre of the lens; and μ, the index of refraction, prove the approximate formula,

$$\frac{1}{d} - \frac{1}{D} = (\mu - 1)\left(\frac{1}{r} - \frac{1}{r'}\right).$$

Under what conditions will this lens be virtually convex, or concave?

5. If light is incident at an angle φ upon one face of a prism whose angle is ε, and if ψ be the angle of emergence, show that

$$\sin\psi = \sin\varepsilon(\sqrt{\mu^2 - \sin^2\varphi} - \cot\varepsilon\sin\varphi);$$

and thence show that when all the angles are small the deviation varies practically as the angle of the prism.

6. Explain the action of the *Kaleidoscope;* of the *Sextant;* of the *Goniometer.*

7. *Optional.*—Can you give any account of Foucault's experiment to determine the velocity of light? What was the primary purpose of that experiment, and what great question did it decide?

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

FIRST CLASS TEACHERS—GRADES A AND B.

CHAUCER.

Examiner—J. E. HODGSON, M.A.

1. Write a short account of Chaucer's life and literary works.

2. "His (Chaucer's) humor and wit were also of the highest and keenest character; his pathos too was tremendous, and his descriptive powers were of the highest order of excellence."—*A. Mills.*

Illustrate this criticism by reference to the "Prologue" and the "Nonne Prest his Tale."

3. "A Clerk there was of Oxenford also."
"The Mellere was a stout carl for the nones."

Give the substance of Chaucer's description of these two characters.

4. Thus real, as a prince is in his halle,
Leve I this chauntecleer in his pasture;
And after wol I telle his aventure.
Whan that the moneth in which the world bigan,
That highte March, whan God first made man,
Was complet, and y-passed were also,
Syn March bygan, thirtty dayes and tuo,
Byfel that Chauntecleer in al his pride,
His seven wyves walkyng him by syde,
Caste up his eyghen to the brighte sonne,
That in the signe of Taurus hadde i-ronne
Twenty degrees and oon, and somwhat more;
He knew by kynde, and by noon other lore,
That it was prime, and crew with blisful stevene.
'The sonne,' he syde, 'is clomben up on hevene
Fourty degrees and oon, and more i-wis.
Madame Pertelote, my worldes blis,
Herkneth these blisful briddes how they synge,
And seth the fressche floures how they springe;
Ful is myn hert of revel and solaas.'
But sodeinly him fel a sorweful caas;
For evere the latter end of joye is wo.
Got wot that worldly joye is soone ago;

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And if a rethor couthe faire endite,
He in a chronique saufly mighte it write,
As for a soverayn notabilité.
Now every wys man let him herkne me;
This story is also trewe, I undertake,
As is the book of Launcelot de Lake,
That wommen holde in ful gret reverence.
Now wol I torne agayn to my sentence.

(*a*) Translate the extract into modern English.

(*b*) Scan the following lines :—

Whan that the moneth, &c.
His seven wyves, &c.
This story is also, &c.

(*c*) Write a note on the uses of final e and es so far as they are exemplified in this extract.

(*d*) As is the book of Launcelot the Lake. Explain.

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

FIRST CLASS TEACHERS—GRADES A AND B.

DYNAMICS.

Examiner—J. C. GLASHAN.

1. "Force is measured by the momentum it would generate in a unit of time."

"An impressed force is an action exerted upon a body in order to change its state either of rest or of moving uniformly forward in a right line.

"Change of motion (momentum) is proportional to the impressed force."

Distinguish between the 'force' spoken of in the former of the above quotations and the 'impressed force' spoken of in the latter quotation.

A mass of 100 lbs. moving with a velocity of 20 ft. per second is uniformly resisted for one minute by a force that can statically support one pound. Determine the change of momentum and the velocity of the mass at the end of the minute.

2. Show that any system of forces acting in one plane on a rigid body can be reduced either to a single force or to a couple.

ABCD is a square. Determine the magnitude and the line of action of the resultant of four forces of 3, 4, 5 and 12 units respectively, whose several lines and directions of action are *AB*, *BC*, *CD*, *DA*.

3. A body *A* appears to a body *C* to move along a straight line with constant acceleration, while another body *B* appears to *A* to be always coming straight towards it with constant velocity. Determine the path of *B* with respect to *C*.

A railway train is moving at the rate of 30 miles per hour, and a person in one of the carriages tosses up a ball vertically with respect to the carriage, with a velocity of 12 ft. per second. Determine the path of the ball with respect to the ground.

4. Define the coëfficient of elasticity, and show that it is equal to the square-root of the ratio of the pressure at any stage during the restoration of form to that at the corresponding stage of the compression.

A ball of 5 lbs. moving with a velocity of 800 ft. per second

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impinges directly on a ball of 100 lbs., moving in the same direction, with a velocity of 2 ft. per second. Find their velocities after impact and the measure of the impulse between them, their coefficient of elasticity being $\frac{2}{3}$.

5. Show how to find the inclination of the suspension-cord in the conical pendulum.

A small smooth ball is running horizontally round the inside of a hemispherical bowl of given size. Show how to determine the height of the ball above the bottom of the bowl by observation of the time taken in making a circuit.

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

FIRST CLASS TEACHERS—GRADES A AND B.

MACBETH.

Examiner— JAS. F. WHITE.

1. What are the historical sources of this play? Examine the use that Shakespeare has made of these materials.

What internal evidences help to fix its date?

2. The Clarendon Press editors say that some parts of this drama were not written by Shakespeare; that they were interpolated after his death, or after he had ceased to be connected with the stage.

Comment on this, stating what parts seem to be referred to, and examining the evidence of their having been written by another hand.

3. If it were done, when 'tis done, then 'twere well
It were done quickly: if the assassination
Could trammel up the consequence, and catch,
With his surcease, success; that but this blow
Might be the be-all and the end-all, here,
But here, upon *this bank and shoal of time*,
We'd *jump the life to come.*—But in these cases,
We still have judgment here; that we but teach
Bloody instructions, which, being taught, return
To plague the inventor: this even-handed justice
Commends the ingredients of our poison'd chalice
To our own lips. He's here in double trust:
First, as *I am his kinsman* and his subject,
Strong both against the deed; then, as his host,
Who should against his murtherer shut the door,
Not bear the knife myself. Besides, this Duncan
Hath borne his *faculties* so meek, hath been
So *clear* in his great office, that his virtues
Will plead like angels, trumpet-tongued, against
The deep damnation of his taking-off:
And pity, like a naked new-born babe,
Striding the blast, or heaven's cherubin, hors'd
Upon the sightless couriers of the air,
Shall blow the horrid deed in every eye,

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That tears shall drown the wind.—I have no spur
To prick the sides of my intent, but only
Vaulting ambition, which o'erleaps itself,
And falls on the other. —*Macbeth, I.* 7.

(a) Fully explain the parts in italics.

(b) Paraphrase ‘If it were done--success," ll. 1-4; "But in—lips," ll. 7-12; "And pity—other," ll. 21-27.

(c) Suggest other readings, and discuss their merits.

(d) Note and explain any peculiarities in the etymology or the syntax.

(e) What is the probable allusion in l. 21?

4. Give a clear analysis of the character of Lady Macbeth: support it by quotations or references.

5. Write a paper upon the supernatural as it appears in this play.

6. (*a*) "And dare me to the desert with thy sword;
If trembling I inhabit then, protest me the baby of a girl."

Fully explain: suggest other readings and estimate their worth.

(*b*) "For't must be done to-night,
And something from the palace; always thought
That I require a clearness."

Modernize.

(*c*) "And in such bloody distance,
That every minute of his being thrusts
Against my near'st of life."

Expand the metaphor. Express the meaning of "near'st of life," "in such bloody distance."

(*d*) "Who cannot want the thought how monstrous
It was for Malcolm, and for Donalbain,
To kill their gracious father?"

Explain the passage. Comment on Shakespeare's use of negatives.

7. Write a paper upon external nature, as depicted in this play, shewing how it "reflects and harmonizes with the moral blackness of the piece."

Education Department, Ontario.

JULY EXAMINATIONS, 1884.

FIRST CLASS TEACHERS—GRADES A AND B.

CANADIAN AND ENGLISH HISTORY.

Examiner—J. DEARNESS.

1. Compare the Feudalism of Old France with that planted in Canada by Richelieu, and encouraged by Louis XIV.

2. Write paragraphs on two of the following subjects:
   - (*a*). The constitution and chief functions of the Supreme (or Superior) Council.
   - (*b*). The Bush-rangers (*coureurs de bois*).
   - (*c*). The beaver-skin monopoly under the Old Régime.

3. Trace the development of the "absolutism of the Tudors." Why was the absolutism of the Tudors tolerated, but that of the Stuarts resisted?

4. Hallam and Macaulay decidedly condemn the execution of Charles I. Review their arguments.

5. Hallam has instituted a parallel between Cromwell and Napoleon, in which, Macaulay thinks that Cromwell "hardly receives fair measure." Reproduce the salient points of the comparison; criticize Macaulay's opinion of it.

6. "Certainly the vessel of our commonwealth has never been so close to shipwreck as in this period". (1688-1697)—*Hallam.* Macaulay agrees with Hallam in holding that the year 1696 saw "the very *nadir* of English prosperity." What causes reduced England to the condition thus described?

7. "His (William's) reign is no doubt one of the most important in our constitutional history, both on account of its general character and of the beneficial alterations in our law to which it gave rise."—*Hallam.* Review briefly the "beneficial alterations" to which Hallam refers.

Education Department, Ontario

JULY EXAMINATIONS, 1884.

FIRST CLASS TEACHERS—GRADES A AND B.

TRIGONOMETRY.

Examiner—J. L. McLELLAN, LL.D.

NOTE—*Ten questions will be considered a full paper.*

1. Trace variation in sign and magnitude in sine and tangent of an angle as it varies from 0° to 360°.

Determine a general expression for all angles that have the same cosine.

2. Prove sine $(A+B)=\sin A \cos B+\cos A \sin B$.

Find expressions for $\sin mA$, $\cos mA$.

3. Given $\log 63 = 1{\cdot}7993405$, and $\log 3 = 0{\cdot}4771213$ find logs of 7 and ·021, and if $\text{Log} \cos 67^\circ\, 21' = 9{\cdot}5855746$, $\text{Log} \cos 67^\circ\, 22' = 9{\cdot}5852716$, find $\text{Log} \cos 67^\circ\, 21'\, 46''$.

4. If θ be the circular measure of an angle between 0° and 90°, then $\sin \theta > \theta - \frac{1}{4}\theta^3$.

Prove that, very nearly, $d^2 - 2rh$ where r is the earth's radius, h the height of the observer's eye, and d the distance of the horizon. Find the difference between the true and the apparent level at the distance of 1200 feet.

5. Prove that the sum of any two sides of a triangle is to their difference as the tangent of half the sum of the opposite angles is to the tangent of half their difference.

The side $a=1$, the side $b=6$, and the included angle $=65^\circ$, find the other angles, given.

$\text{Log } 2 = {\cdot}30103$, $\text{Log} \cot 32^\circ\, 30' = 10.1958127$, $\text{Log} \tan 51^\circ\, 28' = 10{\cdot}0988763$, $\text{Log} \tan 51^\circ\, 29'' = 10{\cdot}0991355$.

6. Show how to find the distance between two inaccessible objects on a horizontal plane.

7. Solve the equations—

(1) $\text{Sin } 3x - 4 = (3 + 8\sqrt{\sin x})x$.

(2) $\text{Sin } 4\theta + \sin 2\theta + \cos \theta = 0$.

(3) Eliminate θ from $\begin{cases} \sec \theta - \cos \theta = m \\ \operatorname{cosec} \theta - \sin \theta = n. \end{cases}$

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8. In any triangle prove

(1) $\text{Sin } 2A + \sin 2B + \sin 2C = 4 \sin A \sin B \sin C.$

(2) $(b + c) \cos A + (c + a) \cos B + (a + b) \cos C = a+b+c.$

(2) $\text{A} \sin (B - C) + b \sin (C - A) \quad c \sin (A - B) = 0.$

9. Obtain expressions for the radii of the escribed circles of a triangle.

Prove $(r_1 - r)(r_2 - r)(r_3 - r) = 4Rr.$

10. Prove that $(\cos \theta + \sqrt{-1} \sin \theta)^{\frac{p}{q}}$ has q different values and no more, p and q being prime to each other.

Obtain the series $\cos x = 1 - \frac{x^2}{1.2} + \frac{x^4}{1.2.3.4} - \&c.$

11. At a point A, due south of a tower, its angular elevation is θ, and at a point c yards due west from A, the elevation is found to be α; shew that the height of the tower is

$$c \sin \theta \sin \alpha \div \sqrt{\sin (\theta + \alpha) \sin (\theta - \alpha)}.$$

12. The elevation of a steeple, on a horizontal plane, is observed, and at a point a feet nearer to it, its elevation is found to be the complement of the former; on advancing in the same direction b feet nearer still, the elevation is found to be double the first. Shew that the height of the steeple is

$$\sqrt{(a + b)^2 - \tfrac{1}{4}a^2}.$$

Education Department, Ontario.

JANUARYY EXAMINATION, 1884.

SECOND CLASS PROFESSIONAL EXAMINATION.

NORMAL SCHOOLS.

GRAMMAR—METHODS.

1. In introducing a class of young pupils to the study of grammar, which would you present first, the noun or the verb? Give reasons.

2. How would you teach the qualifying relation of (*a*) an adjective, (*b*) a prepositional phrase, (*c*) an adjectival clause?

3. Spring comes. The snow disappears. The earth grows warm. The flowers bloom. Combine these four propositions to form a complex sentence, and explain the process as to a class.

4. Explain your mode of teaching the distinction between the use of *shall* and *will* in (*a*) declarative sentences, (*b*) interrogative sentences.

5. Give notes of a lesson on conjunctions.

N.B.—Four questions, of which 3 *must* be one, will be considered a full paper.

Education Department, Ontario.

JANUARY EXAMINATION, 1884.

SECOND CLASS PROFESSIONAL EXAMINATION.

NORMAL SCHOOLS.

SCIENCE OF EDUCATION.

1. Distinguish between *sensation* and *perception*. What are "acquired" perceptions?

2. Briefly discuss the question "What is in the Mind"?

3. "Whatever *Consciousness* may be, there are three characteristics attributed to it by common consent."
State the characteristics referred to.

4. Mention any of the "Secondary" laws of association.

5. "Mind starts from *discrimination*." Briefly explain this, giving illustrations.
Mention some of the conditions necessary to effective mental action.

6. Give the substance of Bain's remarks on Emulation, Prizes. Place-taking.

7. "A third aspect of the Object Lesson has reference to the acquisition of Language."
Give, as far as you can, Bain's remarks on this "Aspect."

Education Department, Ontario.

JANUARY EXAMINATION, 1884.

SECOND CLASS PROFESSIONAL EXAMINATION.

NORMAL SCHOOLS.

MUSIC.

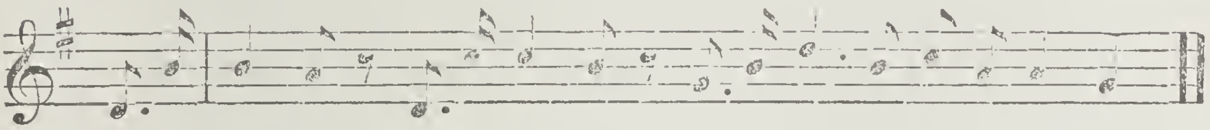
1. Write the scales of E major and B flat major, on the staff, with proper key signatures.

2. How would you keep the attention of very young children while exercising a class on the sounds of the scale?

3. Write four measures of the melody of any song which you have learned; write also the corresponding letter, number, and syllable to each note.

4. What do the terms *legato* and *staccato* mean?

5. Supply bars and time signature to the following exercise:—



6. Transpose the preceding exercise to the key of A major.

Education Department, Ontario.

JANUARY EXAMINATION, 1884.

SECOND CLASS PROFESSIONAL EXAMINATION.

NORMAL SCHOOLS.

JULIUS CÆSAR.

1. "The general cast of character in Shakspeare's females is tenderness and pathos."—*A. Mills.*

Discuss this statement with reference to the female characters in the play of Julius Cæsar.

2. "They would not have you to stir forth to-day."

Recount the arguments brought to bear on Cæsar in connection with this going "forth". What trait of character is disclosed by his yielding?

3. Explain the meaning of the following passages, and assign each to its speaker:—

(*a*) "Alas, my lord,
Your wisdom is consumed in confidence."

(*b*) "The things that threaten me
Ne'er load but on my back."

(*c*) "What touches us ourself shall be last served."

(*d*) "To you our swords have leaden points, Mark Antony."

(*e*) "This day I breathed first."

(*f*) "I know that we shall have him well to friend."

(*g*) "You yourself
Are much condemned to have an itching palm."

(*h*) "Cowards die many times before their deaths."

(*i*) "I have a man's mind, but a woman's might."

(*k*) "Ambition's debt is paid."

Education Department, Ontario.

JANUARYY EXAMINATION, 1884.

SECOND CLASS PROFESSIONAL EXAMINATION.

NORMAL SCHOOLS.

ARITHMETIC—METHODS.

1. Shew how you would teach the numbers from 5 to 10, using "number-pictures." How would you proceed when the combinations from 1 to 20 have been mastered?

2. Shew how you would explain the reason of the rule for placing the partial products in Long Multiplication.

3. Give a lesson on finding the G.C.M. of numbers that can be factored.

4. Shew how to teach, by analysis, the "cases" of "Profit and Loss."

5. Give a lesson
   (1) Developing the idea of a fraction.
   (2) On the notation of fractions (Vulgar).

6. You find that your pupils misapprehend the "rule for finding the area of a rectangle"—regarding the multiplicand, or multiplier, or both, as so many units *long* or *wide*. Indicate the teaching by which you would convince them of the error.

NOTE—*This paper will be valued* 120 *per cent.*

Education Department, Ontario

JANUARY EXAMINATION, 1884.

SECOND CLASS PROFESSIONAL EXAMINATION.

NORMAL SCHOOLS.

MENTAL ARITHMETIC.

1. Write down the product of 398745 by 19.

2. An army lost 10 per cent. of its numbers in its first battle, and 10 per cent. of the remainder in the second battle, and had 16,200 men left. How many in the army at first?

3. A person invests a sum of money in the 5 per cents. at 85, and an equal sum in the 6 per cents. at 96: the income received from the latter investment was $80 more than that from the former. How much did he invest in each kind of stock?

4. The amount of a sum of money at simple interest for 3 years and 3 months was $982, and for 3 years and 6 months the amount was $996. Find the principal and the rate per cent.

5. A commission merchant sold flour at a commission of 3 per cent. on the amount received, and invested in tea at a commission of 2 per cent. on the amount paid for the tea—deducting his commission for both transactions from the amount received for the flour. His entire commission being $200, find the amount invested in tea.

6. Sold goods at a *profit* of $12\frac{1}{2}$ per cent.; had their actual cost been $20.18 greater, the same selling price would have resulted in a *loss* of $12\frac{1}{2}$ per cent. Find the actual cost of the goods.

7. B. rowed a two-mile race with A. and was beaten; had his speed throughout been one-fifth greater, he would have won the race by 22 yards. Find the ratio of their rates of running.

Education Department, Ontario.

JANUARYY EXAMINATION, 1884.

SECOND CLASS PROFESSIONAL EXAMINATION.

NORMAL SCHOOLS.

HYGIENE.

1. "The erect position, then, which we assume so easily, and without thinking about it, is the result of the combined action of muscles." Explain this statement.

2. How are veins distinguished from arteries, with regard to (*a*) structure, (*b*) action, (*c*) the character of the blood?

3. State briefly the evil effects that arise from a lack of ventilation in crowded rooms.

4. "While very soft water cannot be stored for a lengthened period, with impunity, in leaden vessels, the danger of the storage of hard water, under the same circumstances, is in most cases much greater." (*a*) Explain as fully as you can. (*b*) How can you distinguish soft water from hard?

5. Write a note on under-clothing, stating, with reasons, the advantages or disadvantages of wearing, next the skin, (*a*) linen, (*b*) cotton, or (*c*) woollen fabrics.

Education Department, Ontario.

JANUARY EXAMINATION, 1884.

SECOND CLASS PROFESSIONAL EXAMINATION.

NORMAL SCHOOLS.

READING.

1. Answer the following questions on the Phonic Method of teaching to read:—

    (1). What method is adopted in selecting the letters for the words of a lesson?

    (2). How are the sounds of the letters taught? Give a brief illustration.

    (3). How would you drill a class by comparison, contrast and building of words?

2. Spell the following words phonically, and use diacritical marks:—Have, above, heaven, dread, beauty, people, approve, tongue, catalogue, laughed, sought, island, schisms.

3. How would you teach the proper uses of inflection and modulation without reference to rules?

4. Give the principle for rhetorical pauses, based on the analysis of the sentence, and state when the grammatical relations would not sanction such pauses.

> "O, pardon me, thou bleeding piece of earth,
> That I am meek and gentle with these butchers!
> Thou art the ruins of the noblest man
> That ever lived in the tide of times.
> Woe to the hand that shed this costly blood!
> Over thy wounds now do I prophecy,—
> Which, like dumb mouths, do ope their ruby lips,
> To beg the voice and utterance of my tongue,—
> A curse shall light upon the limbs of men;
> Domestic fury, and fierce civil strife,
> Shall cumber all the parts of Italy;
> Blood and destruction shall be so in use,
> And dreadful objects so familiar,
> That mothers shall but smile when they behold
> Their infants quarter'd with the hands of war;

[OVER.

And pity chok'd with custom of fell deeds;
And Cæsar's spirit, ranging for revenge,
With Ate by his side, come hot from hell,
Shall in these confines, with a monarch's voice,
Cry *Havoc!* and let slip the dogs of war;
That this foul deed shall smell above the earth
With carrion men, groaning for burial."

(1). Briefly indicate the predominant feeling with which the above should be given.

(2). What expression would you give to "butchers," and to the parenthetical clause, lines 7 and 8, and how would you vocally combine lines 6 and 9?

(3). What feeling and vocal expression should distinguish lines 17-22?

(4). Mark the inflexions on "butchers," l. 3; "blood," l. 5; "revenge," l. 17; "hell," l. 18; and "Havoc," l. 20.

(5). Mark the one emphatic word in each of the lines 5, 9, 14, 19.

Education Department, Ontario

JANUARY EXAMINATION, 1884.

SECOND CLASS PROFESSIONAL EXAMINATION.

NORMAL SCHOOLS.

DRAWING.

1. Describe a Broken Line, and illustrate the same

2. What is an Indicated Line and its use?

3. Give the plan for Drawing the Maltese Cross.

4. Show the difference between a Horizontal Abstract Curve, and a Perpendicular Curve.

5. What is requisite to draw an object correctly?

6. What do Light and Shadow give to an object?

7. Define Light and Shade. Illustrate the same by a design.

8. Draw a Cone, base being above the Line of Sight.

9. How does colour affect Light and Shade?

10. Explain and illustrate what is meant by Reflex of Light.

Education Department, Ontario.

JANUARY EXAMINATION, 1884.

SECOND CLASS PROFESSIONAL EXAMINATION.

NORMAL SCHOOLS.

CHEMISTRY—METHODS.

1. A molecule of water is composed of two atoms of Hydrogen and one atom of Oxygen. Shew clearly how you would arrive at a knowledge of this fact.

2. How would you teach the characteristic properties of acids, alkalies, and bases?

3. You have three bottles—one containing nitric acid, one containing sulphuric acid, and one containing hydrochloric acid. By what experiments would you identify each acid?

4. Write notes of a lesson on the preparation and properties of carbon dioxide.

5. Give, as fully as you can, a lesson on Hard Water.

Education Department, Ontario

JANUARY EXAMINATION, 1884.

SECOND CLASS PROFESSIONAL EXAMINATION.

NORMAL SCHOOLS.

PRACTICAL ENGLISH.

1. Indicate the quantity, or sound, of the accented syllable in each of the following words:—Dolorous, abdomen, apparatus, obverse, Genoa, telegraphy, museum, irremediable, sovereign, sonorous.

2. Distinguish—
   - (*a*) "A fool," says Solomon, "despises wisdom."
     A fool says, "Solomon despises wisdom."
   - (*b*) Fetch the book.
     Bring the book.
   - (*c*) He gave an answer.
     He made a reply.
   - (*d*) A man of good reputation.
     A man of good character.
   - (*e*) I saw my brother George only.
     Only I saw my brother George.

3. Correct the following:—
   - (*a*) He did not cry out as some have done against it.
   - (*b*) He aint a good reader for he dont mind his stops.
   - (*c*) In the sister island, indeed, we have read of such horrors, but now they are brought home to us.
   - (*d*) If I am not mistaken, you are in the wrong.
   - (*e*) He rushed pell-mell down the stairs.

4. Write the following sentences, substituting equivalents for the italicised words:—
   - (*a*) The *assembly took place* in the *suburbs.*
   - (*b*) The two men are *mutually* dependent.
   - (*c*) *Not many* people *were present.*
   - (*d*) The *report* has spread but is not *credited.*

Education Department, Ontario

JANUARY EXAMINATION, 1884.

SECOND CLASS PROFESSIONAL EXAMINATION.

NORMAL SCHOOLS.

ALGEBRA—METHODS.

1. Shew how you would impart clear ideas of a CO-EFFICIENT. What Arithmetical example would you give to illustrate the following:—$5a + 4a = 9a$?

2. Shew, as you would to a class, how to deduce the rule for factoring expressions of the form $x^4 + 4y^4$; $x^4 + 2x^2y^2 + 9y^4$.

3. How would you develop the idea of the symmetry of an expression with respect to two or three letters?

4. Clearly illustrate the principle which enables you to shew (without actual division) that $ax^3 - (a^2 + b) + b^2$ is exactly divisible by $ax + b$.

5. Shew how you would teach the distinction between an "Equation" and an "Identity."

6. Do the following in such a way as to show the advantage of taking fractions in "groups":—

(1.) Reduce to simplest form

$$\frac{1+y}{1-y} + \frac{4x}{1+x^2} + \frac{8x}{1+x^4} - \frac{1-x}{1+x}.$$

(2.) Solve the equation $\dfrac{1}{x-a} + \dfrac{1}{x-b} = \dfrac{a+b}{ab}$.

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JANUARY EXAMINATION, 1884.

SECOND CLASS PROFESSIONAL EXAMINATION.

NORMAL SCHOOLS.

PHYSICS—METHODS.

1. Define force. What is meant by the *conservation* and what by the *correlation* of forces?

2. Draw a diagram of the common pump, and give a lesson on this machine.

3. Describe fully how you would teach that heat is a *mode of motion*.

4. Your school-room is heated by a common stove. Shew how you would ventilate it at the least possible cost, explaining fully the scientific principles involved.

5. Explain the *rationale* of the following:—
   (1). Water placed on a stove in a room.
   (2). A wet towel wrapped round a vessel containing water keeps it cool.
   (3). If you sit near an open window you will probably catch cold.

Education Department, Ontario.

JUNE EXAMINATION, 1884.

SECOND CLASS PROFESSIONAL EXAMINATION.

GRAMMAR—METHODS.

1. "It is not as a set of rules for enabling English people to speak correctly that English Grammar has any value."

Why not? What educational value, then, has English Grammar?

2. Sketch your plan of teaching children to distinguish the parts of speech.

3. What objections are there to memorizing definitions first and applying them afterwards?

4. How would you show a class that the infinitive is really a noun, and the participle an adjective?

5. Show how you would teach a class the analysis of complex sentences by deducing one from a simple sentence.

6. "I shall not see him no more."

How would you teach a class that this sentence is ungrammatical?

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JUNE, 1884.

SECOND CLASS PROFESSIONAL EXAMINATION.

MUSIC.

1. Write the time-names used in (*a*) two, (*b*) three, (*c*) four, and (*d*) six-part measure.

2. Write two different time-signatures for three-part measure, and explain difference.

3. Write the key-signature for each major scale on a staff, naming the key represented by each signature.

4. Write the chromatic scale on the staff ascending and descending, using sharps ascending and flats descending.

5. Write the following exercise in the keys of C, E, B flat; $\frac{2}{4}$ time.

1, 3, 5, sharp 4, 5, 8.

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SECOND CLASS PROFESSIONAL EXAMINATION.

NORMAL SCHOOLS.

ENGLISH LITERATURE.

1. (*a*) Name the three *unquestioned* Roman plays of Shakespere.
(*b*) What is the historical source whence the author obtained the material of "Julius Cæsar"?
(*c*) Describe the "dramatic unities." How has Shakespere observed them in this play?

2. (*a*) Give a brief sketch of the characters of Brutus and Cassius respectively, as developed by the Poet.
(*b*) Quote any passages in confirmation of your opinion.

3. In the following passages (1) state the connection in which they occur; (2) place the name of the speaker in front of each passage; explain the words in italics:—

(*a*) If you know
* * * *then* hold me *dangerous*.
(*b*) Let it be *who it is*.
(*c*) That part of tyranny that I do bear
I can shake off at pleasure.
(*d*) O, *he* sits high in all the people's hearts!
And that which would appear offence in us,
His *countenance*, like richest *alchemy*,
Will change to virtue and to worthiness.
(*e*) The *genius* and the *mortal instruments*
Are then in council.
(*f*) Thou, like an *exorcist*, hast conjured up
My mortified spirit.
(*g*) My credit now stands on such slippery ground
That *one* of *two bad ways* you must *conceit* me.

4. What different views have been advanced as to why the play bears its particular name?

5. What does Brutus mean when he says, "Or *else* were this a savage spectacle."
"*Else* shall you not have any hand at all about his funeral"?

6. Give, as nearly as you can, in the poet's words, Antony's estimate of Lepidus.

[OVER

7. Compare the ideas respecting suicide held by Cassius and by Hamlet.

8. Write short notes on the following:

Ant. "Cry Havoc! and let slip the dogs of war."

Cass. "I have as much of this in art as you,
But yet my nature could not bear it so."

" "The posture of your blows are yet unknown;
But for your words, they rob the Hybla bees,
And leave them honeyless."

" "This tongue had not offended so to-day,
If Cassius might have ruled."

" "And where I did begin there shall I end."

9. "We must notice in the case of Shakspere, as a piece of higher art, the dramatic inconsistency of his characters."—*Dowden.* How is this statement exemplified in the present play?

Six of these questions will be reckoned a full paper, among which must be 2, 3, 5, 8.

Education Department, Ontario.

JUNE, 1884.

SECOND CLASS PROFESSIONAL EXAMINATION.

NORMAL SCHOOLS.

ARITHMETIC--METHODS.

1. How would you teach the numbers from 1 to 5, using the number pictures?

2. Give a lesson on doing subtraction by the method of borrowing.

3. What are the chief difficulties usually met with in teaching division? How would you overcome these?

4. How would you show that

(*a*) $\frac{2}{5} = 2 \div 5$ or $\frac{1}{5}$ of 2.
(*b*) $\frac{2}{7}$ of $\frac{5}{11} = \frac{10}{77}$.
(*c*) $\frac{5}{17} \div \frac{4}{7} = \frac{35}{68}$?

5. Give a lesson on the reduction of a pure repetend to its equivalent vulgar fraction, and show how you would use this to teach the reduction of a mixed repetend to a vulgar fraction.

6. Outline your method of teaching one of the following:—
   (*a*) The various cases of simple interest.
   (*b*) The difference between interest and discount.
   (*c*) The various cases of alligation.
   (*d*) How to find the area of a circle.

Five questions a full paper.

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SECOND CLASS PROFESSIONAL EXAMINATION.

WRITING.

1. Write the nine principles and the five elements, giving both forms of the fourth principle.

2. Name three advantages of simultaneous tracing of the head-line to number.

3. What general principle would guide you as to speed and pauses, in counting?

4. What practical use can you make of emphasizing particular numbers in counting?

5. Name three general rules to be attended to in any copy, from so simple a one as that of the letter "m," to that of a long sentence.

6. Assuming the capital letters to be three times the length of the *short* small letters, what proportion will the loop letters, and "t," "d," "p" bear to the latter?

7. What faults would probably occur in writing the words "done" and "path".

8. Write the word "Reconciliatory" in large hand, *i.e.*, the the small letters filling one space.
Write in small hand the following couplet:

"Defer not till to-morrow to be wise,
To-morrow's sun for thee may never rise."

Education Department, Ontario.

JUNE EXAMINATION, 1884.

SECOND CLASS PROFESSIONAL EXAMINATION.

MENTAL ARITHMETIC.

1. A. and B. can do a work in $\frac{2}{3}$ day, B. and C. in $\frac{3}{4}$ day, and C. and A. in $\frac{4}{5}$ day. In what time could all working together do the work?

2. A crew rows down stream a certain distance in 30 minutes, and up again in 32 minutes; the rate of stream being half a mile an hour, find the distance.

3. A person sells $1,200 5 % stock at 95, in order to invest in 6 % stock; what price must he pay for this to produce the same income?

4. The amount of a sum of money for a certain time is $575 if 6 % interest be charged, and $625 if 10 % interest be charged. Find the principal and the time.

5. The time past noon is $\frac{29}{51}$ of the time till midnight. What o'clock is it?

6. B. ran a mile race with A., and was beaten. Had his speed throughout been $\frac{1}{5}$ greater he would have won by 11 yards. Find the ratio of their rates of running.

7. Sold goods at a profit of 10 %. Had they cost $12 more there would, at the same selling price, have been a loss of 10 %. Find cost of the goods.

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JUNE EXAMINATION, 1884.

SECOND CLASS PROFESSIONAL EXAMINATION.

HYGIENE.

1. Give a general description of the circulation of the blood in man. How may this circulation be proved?

2. "One and the same part of the body may represent each of the three kinds of levers, according to circumstances."

Describe the three kinds of levers, and illustrate the above statement by reference to the human foot.

3. On what does the difference between the sense of "touch" and the sense of "pain" depend?

4. Mention, with reasons, a few of the common causes of impurities in the air, and show how these impurities affect vitality.

5. Write notes on the general effects of well-regulated, excessive, and insufficient exercise, respectively.

Education Department, Ontario

JUNE, 1884.

SECOND CLASS PROFESSIONAL EXAMINATION.

NORMAL SCHOOLS.

READING.

1. Explain the phonic system.

2. Describe the word and sentence methods of teaching and of giving a first lesson to a class. How would you secure natural expression in such a lesson, as opposed to the monotonous and sing-song tones?

3. How would you drill classes in the modulations of the voice—Pitch, Inflection and Force? Give the two leading principles for the right use of inflections.

4. Give the heads of your method of conducting a reading lesson with a higher class, such as will secure correct and distinct utterance, and a just expression.

5. *Selection from Julius Cæsar, for expression.*

You all do know this mantle: I remember
The first time ever Cæsar put it on;
'Twas on a summer's evening, in his tent,
That day he overcame the Nervii.
Look! in this place ran Cassius' dagger through:
See what a rent the envious Casca made:
Through this the well-beloved Brutus stabb'd;
And, as he pluck'd his cursed steel away,
Mark how the blood of Cæsar follow'd it,
As rushing out of doors to be resolv'd
If Brutus so unkindly knock'd, or no;
For Brutus, as you know, was Cæsar's angel:
Judge, O you gods, how dearly Cæsar lov'd him!
This was the most unkindest cut of all;
For, when the noble Cæsar saw him stab,
Ingratitude, more strong than traitors' arms,
Quite vanquished him; then burst his mighty heart;
And in his mantle muffling up his face,
Even at the base of Pompey's statue,
Which all the while ran blood, great Cæsar fell.

[OVER

(1) Interpret the spirit in which Antony gives the above passage. What expression should mark lines 1 to 4; 5 to 14; 15 to 20? In what respect must the delivery of this speech differ from that of Brutus in the same scene, so as to illustrate the character of the speakers?

(2) Emphasise, by underlining, one leading word in each of the lines 5, 7, 11, 12, 15. Give your reasons for lines 5, 11 and 15.

(3) Mark the rhetorical pauses by a vertical dash in lines 2, 3, 4, 6, 7.

(4) Mark the inflections on "Look," l. 5; "Brutus," l. 7; "gods" and "lov'd him," l. 13.

Education Department, Ontario.

JUNE, 1884.

SECOND CLASS PROFESSIONAL EXAMINATION.

NORMAL SCHOOLS.

DRAWING.

1. Explain, very briefly, how you would introduce the subject of drawing for the first time, stating (*a*) the apparatus required by both teacher and pupils; (*b*) how by means of the cube you would teach the idea of a straight line; (*c*) how by means of the cone you would teach the idea of a curved line; (*d*) what facts you would lead pupils to observe when alalyzing, first, the *form*, and second, the *construction* of a flat copy or blackboard sketch, with reference to the object itself.

2. Describe, with illustrations, (*a*) a reversed curve, (*b*) interlacing forms, (*c*) overlying forms.

3. Draw the quatrefoil upon a square, from the following dictation:

(*a*) Draw an upright square one inch to a side, as an enclosing figure.
(*b*) Draw the diagonals and bisect each side of the square.
(*c*) Join the points of division, by oblique lines, thus inscribing a square.
(*d*) Quadrisect each side of the inscribed square.
(*e*) On the two inner parts as base, draw simple curves, curving outward, with altitude, equal to one-half of base.
(*f*) Sketch and strengthen the outline of the quatrefoil.

4. Dictate directions for drawing an upright view of a cone, with base below the line of sight.

5. Draw the following, from directions given:

(*a*) A vase (in elevation) height 1½ inches, width of top and bottom each one-third height. Apply the reversed curve for sides, giving to the upper segment of the curve the character of a circle, and to the lower segment of the curve the character of an upright oval. Name the parts of the vase with lettered or numbered references.
(*b*) A cube (in angular perspective) one inch to a side. The cube is left of the observer and below the line of sight, and one of its receding sides or edges makes an angle of

[OVER

about 30 degrees with a horizontal line. Upon the cube stands a cylinder whose axis is about $1\frac{1}{4}$ inches long—diameter of ellipses of ends of cylinder in the proportion of 1 to 4. Indicate the invisible edges of both cube and cylinder by dotted lines.

(*c*) A rectangular box, in horizontal perspective. Show the thickness of the material, the box being open at top—*nolid.* The box stands to the left of observer, with top below the line of sight. Box $1\frac{1}{4}$ inches long, $\frac{3}{4}$ inch high, and $\frac{3}{4}$ inch wide.

6. Distinguish between (*a*) light, (*b*) shade, (*c*) shadow, giving referenced illustrations, assuming the illuminating body to be to the left, and a little above the object.

7. Tell why neither shade nor shadow is ever absolutely black.

8. Tell (*a*) how distance controls the apparent size of an object; (*b*) how position controls the apparent shape or form of an object. (*c*) Mention a familiar example of each case, with reference to the circle.

Additional, but not necessary to pass.

Give plan, elevation, and perspective view, of a rectangular block of stone, standing on end. Dimensions—height, one foot; end, $\frac{1}{2}$ foot square. Scale, one inch to the foot.

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SECOND CLASS PROFESSIONAL EXAMINATION.

NORMAL SCHOOLS.

CHEMISTRY.

1. Two powders are given you; one is a mechanical mixture, the other a chemical combination of sulphur and iron. In what respects would the powders differ, and by what experiments would you distinguish the one from the other?

2. State fully *all* that is implied in the formula H_2O.

3. Describe the method you would use to determine the composition of water (1) by volume, (2) by weight.

You are given a bottle of well-water, and asked to ascertain if it is sufficiently pure for drinking. Describe clearly what experiments you will make to ascertain this, and explain such experiments by equations.

4. The amount of carbon dioxide in our atmosphere does not appear to increase; how do you account for this? What is the usual quantity in our atmosphere? What amount renders the atmosphere unhealthy? How would you ascertain if this amount is exceeded in a school-room?

5. What is the action of strong nitric acid on copper? Give equations fully illustrating this reaction.

6. Give "notes of lesson" on the chemistry of bleaching.

Education Department, Ontario

JUNE, 1884.

SECOND CLASS PROFESSIONAL EXAMINATION.

EDUCATIONAL PSYCHOLOGY.

1. Discuss fully the influence of pleasure and pain on concentration; and draw conclusions for the guidance of the teacher.

2. Discuss the influences of the "Social Motives" in the work of education.

3. Do the materials that have once been in the mind come into it again fortuitously, or by some law? If there is a law at work, explain it fully, giving practical illustrations.

4. Explain fully and illustrate each of the following processes:—Comparison, Abstraction, Generalization, Judgment, Reasoning, Induction, Deduction, Systemization; and what is meant by the Comprehension and the Extension of a term.

Education Department, Ontario

JUNE EXAMINATION, 1884.

SECOND CLASS PROFESSIONAL EXAMINATION.

PRACTICAL ENGLISH.

1. (*a*) Shew how each of the following words differs in meaning according to its accent or pronunciation:—learned, courtesy, essay, cleanly, obverse, grease.

(*b*) Indicate, as clearly as you can, the pronunciation of the following:—enervate, figure, Genoa, gyve, hearth, importune, industry, isthmus, leverage, morale, pedestal, ration.

2. Distinguish—education, instruction, learning; each other, one another; evidence, testimony; appear, seem; between, among; language, tongue.

3. Correct the errors in the following sentences:—

(*a*) The bishops having complained that their life was in danger, they withdrew from the house.

(*b*) Alfred the great was of a most noble and a generous disposition.

(*c*) Fish have on either side the neck a curious organ called the gills.

(*d*) Marcus Tullius Cicero, the greatest name in Roman literature, was born at Arpinum.

(*e*) The man was tried, condemned, and executed previous to the arrival on the scene of his father.

Education Department, Ontario

JUNE EXAMINATION, 1884.

SECOND CLASS PROFESSIONAL EXAMINATION.

ALGEBRA—METHODS.

1. Give an arithmetical illustration of

$$6a + 4a = 10a,\ 6a - 4a = 2a.$$

2. Show how you would lead up to the rule for factoring expressions of the form $x^4 + x^2y^2 + y^4$.

3. Show how you would make plain the principles which are generally used in factoring $a(b - c)^3 + b(c - a)^3 + c(a - b)^3$.

4. Having taught a class some facts about $a^3 + b^3 + c^3 - 3abc$, how would you lead them to the knowledge of corresponding facts about $a^3 + b^3 - c^3 + 3abc$, and $a^3 - b^3 - c^3 - 3abc$.

6. Give outline of a lesson on simple equations of one unknown quantity.

6. Teach the solution of $\dfrac{1}{x - a} + \dfrac{1}{x - b} = \dfrac{1}{b} + \dfrac{1}{a}$.

Education Department, Ontario.

JUNE EXAMINATION, 1884.

SECOND CLASS PROFESSIONAL EXAMINATION.

PHYSICS.

1. State what you know of the constitution of matter.

2. Describe some form of compensating pendulum, and point out the principle upon which its construction is based.

3. Describe the construction and mode of action of the common pump.

4. Describe the barometer. When a person sucks a fluid from a vessel through a straw, what force carries the fluid up the straw?

5. The sun, on a summer day, has been shining equally, for some time, upon windows, some of the sills and frames of which are painted white and others black. On placing your hand upon the window-panes and the differently painted wood-work, will you experience any difference in the warmth of each? If so, explain the cause.

6. One pound of steam, at the temperature of 100°C., is passed through ten pounds of water, the temperature of which is 0°C., describe what occurs, and state what will be the temperature of the water at the conclusion of the experiment.

7. Explain the following:

(1) How a small power can be applied to raise a great weight?

(2) Why a waggon overloaded at the top is easily upset?

(3) How the wick of a lamp is supplied with oil?

(4) Why two garments are warmer than a single one of the same material, and of a thickness equal to the two together?

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

FIRST CLASS TEACHERS—GRADES A AND B.

ANCIENT HISTORY AND GEOGRAPHY.

Examiner—CORNELIUS DONOVAN, M.A.

1. Briefly describe Xerxes' invasion of Greece, from the passage of the Hellespont to the battle of Salamis, inclusive.

2. State the causes which led to the preëminence of Athens among the Grecian states; and shew how this preëminence affected the welfare of Greece.

3. Give a short description of the condition of the Roman Republic after the conquest of Carthage and Greece.

4. Sketch the leading events in the life of Julius Cæsar, and shew the influence of his career on the era in which he flourished.

5. Write notes on—Areopagus, Socrates, Achaean League, Licinian Law, Cato, Mithridates.

6. Draw an outline map of *Mare Mediterraneum*, marking the locations and the ancient names of its islands, and of the principal countries and cities on its shores.

7. What and where were the following:—Propontis, Iberus, Euboea, Sequana, Utica, Corcyra, Jura, Chersonesus, Lugdunum, Gades?

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

FIRST CLASS TEACHERS—GRADES A AND B.

ALGEBRA.

Examiner—J. A. McLELLAN, LL.D.

NOTE.—75 *per cent. reckoned a full paper.*

1. Reduce the following to a single fraction:—

$$\frac{a}{(a-b)(a-c)(x-a)}+\frac{b}{(b-a)(b-c)(x-b)}+\frac{c}{(c-a)(c-b)(x-c)}$$

and find the value of

$$\frac{\sqrt{(a+bx)}+\sqrt{(a-bx)}}{\sqrt{(a+bx)}-\sqrt{(a-bx)}}\text{ when }x=\frac{2ac}{b(1+c^2)}.$$

2. If the $f(x)^n$, $\Phi(x)^m$ (n not less than m) are equal for more than n different values of x, they are equal for all values, and the coëfficients of equal powers of x in each are equal to one another.

Determine the value of

$$\frac{b+c+d}{(a-b)(a-c)(a-d)}+\text{ three similar terms.}$$

3. If $\dfrac{A+B+C}{abc}=\dfrac{A}{a}+\dfrac{B}{b}+\dfrac{C}{c}$

and $(A+B+C)(a+b+c)=Aa+Bb+Cc$,

then will $\dfrac{A}{1+a^2}+\dfrac{B}{1+b^2}+\dfrac{C}{1+c^2}=0$.

4. Prove that $x^4+px^3+qx^2+rx+s$ is a perfect square if $p^2s=r^2$, and $q=\dfrac{p^2}{4}+2\sqrt{s}$.

5. Solve

(1) $a^3+a^2x+ay+z=0$

$b^3+b^2x+by+z=0$

$c^3+c^2x+cy+z=0$.

(2) $n\sqrt{(1+x)}-n\sqrt{(1-x)}=\sqrt{(m^2+n^2)}$.

In the case of (2) explain fully the difficulty that only one of the values found for x satisfies the equation.

6. Eliminate x, y, z, from

$$(y+z)^2=4a^2yz,\ (z+x)^2=4b^2zx,\ (x+y)^2=4c^2xy.$$

7. Shew that the successive convergents of a continued fraction approach more and more nearly to the true value of the fraction.

Prove that $\dfrac{p}{q}\times\dfrac{p'}{q'}\gtrless x^2$, as $\dfrac{p}{q}\gtrless x$.

8. If $x+y+z=xyz$, or if $yz+zx+xy=1$,

then will $\dfrac{2x}{1-x^2}+\dfrac{2y}{1-y^2}+\dfrac{2z}{1-z^2}=\dfrac{2x}{1-x^2}\cdot\dfrac{2y}{1-y^2}\cdot\dfrac{2z}{1-z^2}$

9. The value of a determinant will not be altered if the columns be written in order as rows, and *vice versa*.

If two determinants $\triangle$ and $\triangle'$, of the n^{th} degree be such that the first row of the one is the same as the last row of the other, the second row of the one the same as the $(n-1)^{th}$ row of the other, the third row of the one the same as the $(n-2)^{th}$ row of the other, and so on, then will

$$\triangle=(-1)^{\frac{1}{2}n(n-1)}\triangle'.$$

10. Prove (1)

$$\begin{vmatrix} x & y & z \\ z & x & y \\ y & z & x \end{vmatrix}=\begin{vmatrix} x & y & z \\ 1 & -1 & 0 \\ 1 & 0 & -1 \end{vmatrix}\times\begin{vmatrix} x & y & z \\ 1 & -w & 0 \\ 1 & 0 & -w \end{vmatrix}\times\begin{vmatrix} x & y & z \\ 1 & -w^2 & 0 \\ 1 & 0 & -w^2 \end{vmatrix}$$

in which $w^2+w+1=0$.

(2) $$\begin{vmatrix} (a+b)^2 & c^2 & c^2 \\ a^2 & (b+c)^2 & a^2 \\ b^2 & b^2 & (c+a)^2 \end{vmatrix}=2abc(a+b+c)^3.$$

11. In how many orders can m positive units and n negative units be arranged so that the sum to any number of terms may never be negative. $(m>n)$.

12. Sum the terms $1\cdot2\cdot3\cdot8+2\cdot3\cdot4\cdot9+3\cdot4\cdot5\cdot10+$ etc., to n terms, and $\dfrac{4}{2\cdot3\cdot4}+\dfrac{7}{3\cdot4\cdot5}+\dfrac{10}{4\cdot5\cdot6}+\dfrac{13}{5\cdot6\cdot7}+\ldots\ldots$ to n terms and to infinity.

13. Determine the coëfficient of x^r in the expansion of $(1+x)(1+cx)(1+c^2x)\ldots\ldots$, the number of factors being unlimited and c less than unity.

14. Shew that $1+\frac{2^3}{\underline{|2}}+\frac{3^3}{\underline{|3}}+\frac{4^3}{\underline{|4}}+\ldots\ldots=5e$.

15. Solve (1) $(x+y)(x-y)=40,\quad \frac{x+y}{x-y}=\frac{145}{x^2+y^2}$.

(2) $\frac{x^2+y^2}{x+y}=\frac{a^2+b^2}{a+b},\quad \frac{x^4+y^4}{x^3+y^3}=\frac{a^4+b^4}{a^3+b^3}$.

(3) $(1+x^2)^2=2ax(1-x^2)$.

16. If $a_0, a_1, a_2, a_3, \ldots.$ be the coëfficients in order of the expansion of $(1+x+x^2+\ldots.+x^r)^n$, prove that

(1) $a_0+a_1+a_2+\ldots.+a_{nr}=(r+1)^n$

(2) $a_1+2a_2+3a_3+\ldots.+nra_{nr}=\frac{1}{2}nr(r+1)^n$.

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

FIRST CLASS TEACHERS—GRADES A AND B.

ANALYTICAL GEOMETRY.

Examiner—J. A. McLELLAN, LL.D.

NOTE.—80 *per cent. of this paper will be reckoned a full paper.*

1. Show how to transform an equation from one pair of axes to another with the same origin.

If (x, y), (x', y') be the coördinates of a point referred to rectangular and oblique systems with the same origin, and if the axes of the first system bisect the angles between those of the second, prove that

$$x=(x'+y')\cos\frac{\omega}{2}, \quad y=(x'-y')\sin\frac{\omega}{2}.$$

2. Obtain the equation to a straight line in the form $x\cos\alpha + y\sin\alpha=p$.

Find the condition that the intersection of

$$x\cos\alpha + y\sin\alpha=p, \; x\sin\alpha + y\cos\alpha=q,$$

should lie on the straight line which joins the points (2, 3), (3, 2).

3. Find the coördinates of the point of intersection of the lines $\frac{2a}{r}=\cos\left(\theta-\frac{\pi}{2}\right)$, $\frac{a}{r}=\cos\left(\theta-\frac{\pi}{6}\right)$, and the angle between the lines.

4. Find the equation to a circle, the axes being inclined at an angle ω.

If $m^2(x+y-m)^2=2n^2xy$ represent a circle, determine the radius, the centre, and the angle between the axes.

5. Taking the pole at a distance c from the centre of a circle of radius a, find the equation to the circle.

Find the equation of the chord joining to points (α, β) on the circle $r=2a\cos\theta$.

6. Find the condition that the straight line $x\cos\alpha+y\sin\alpha=p$ should touch the circle $x^2+y^2=2(ax+by)$.

(OVER.)

7. Find the equation to the normal at any point of a parabola.

Find the locus of the intersection of normals at the extremities of the focal chords of the parabola $y^2 = 4ax$.

8. Investigate the equation of the ellipse in the form

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$$

If (x_1, y_1) be the coördinates of the middle point of a chord of the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$, shew that the equation of the chord may be written $\frac{xx_1}{a^2} + \frac{yy_1}{b^2} = \frac{x_1{}^2}{a^2} + \frac{y_1{}^2}{b^2}$.

9. Investigate the equation of the tangent of a hyperbola referred to its asymptotes as axes.

If two tangents be drawn to a hyperbola, and the points in which they intersect the asymptotes be joined, the joining lines will be parallel.

10. Discuss the results in the equation $Ax^2 + 2Bxy + Cy^2 + 2Dx + 2Ey + F = 0$, when one or more of the constants vanish.

Consider the meaning of the following equations and trace, without finding the axes, the lines they represent:—

(1) $y^2 - 4xy + 4x^2 + 6x - 3y = 0$.
(2) $2xy = x + y$.
(3) $2(x^2 + y^2) = (x + y - 2)^2$.

11. Explain the *eccentric* angle of a point P on an ellipse.

Obtain the equation of a chord in terms of the eccentric angles of its extremities.

12. Determine the point at which the straight line $\frac{x}{a} + \frac{y}{b} = \frac{1}{2}$ is tangent to the parabola $\sqrt{\frac{x}{a}} + \sqrt{\frac{y}{b}} = 1$.

13. Shew that if a circle be described about the triangle formed by a tangent and asymptotes of $xy = c^2$, the locus of its centre is $(x + y \cos \omega)(y + x \cos \omega) = c^2$, where ω is the angle between the asymptotes.

14. ABC is a triangle inscribed in a circle; from any point O in the circumference, perpendiculars are drawn to OA, OB, OC, meeting BC, CA, AB, in D, E, F; prove D, E, F, are collinear with the centre of the circle.

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

FIRST CLASS TEACHERS—GRADES A AND B.

TRIGONOMETRY.

Examiner—J. A. McLELLAN, LL.D.

NOTE—75 % *reckoned a full paper.*

1. Express all the ratios of an angle in terms of the sine, and shew how to construct an angle of given ratio, *e.g.* whose sine is $\frac{a}{b}$.

Shew that $(\sec^2 a - \cos^2 a)(\operatorname{cosec}^2 a - \sin^2 a) = 2 + \sin^2 a \cos^2 a$.

2. Obtain sines of 30°, 18°, 45°.

$A\ B\ C$ is a triangle, $\sin(A - B) = \frac{1}{2}$, $\cos C = 0$; find A, B, C.

3. Shew that $\tan^{-1} x + \tan^{-1} y = \tan^{-1} \frac{x+y}{1-xy}$; and that $\sin n\theta = 2 \sin (n-1)\,\theta \cos \theta - \sin (n - 2\theta)$.

4. Prove:

(1) $\operatorname{Tan} 70° + \tan 20° = 2 \sec 5°$.

(2) $\frac{\operatorname{Sin} 3\theta - \sin \theta}{\operatorname{Sin} 5\theta - \sin 3\theta} = \frac{\cos 2\theta}{\cos 4\theta}$

(3) $\frac{\operatorname{Sec} A - \sec B}{\operatorname{Cosec} A - \operatorname{cosec} B} + \tan \frac{A+B}{2} \tan A \tan B = 0$.

5. Investigate the formula $\triangle S = \{ s(s-a)(s-b)(s-c) \}^{\frac{1}{2}}$.

If $a = b$ prove

(1) $\operatorname{Sin} A = \frac{\sqrt{4a^2 - c^2}}{2a}$. (2) $a = \frac{c \cos A}{1 - \cos C}$.

(3) $S = a^2 \sin A \sin \frac{C}{2} = \frac{c\sqrt{4a^2 - c^2}}{4}$.

6. Prove (1) $\frac{a-b+c}{a+b+c} = \frac{\sin A - \sin B + \sin C}{\sin A + \sin B + \sin C}$

(2) $\frac{\operatorname{Cos} A}{\sin B \sin C} + \frac{\cos B}{\sin C \sin A} + \frac{\cos C}{\sin A \sin B} = 2$

(3) If D be the middle point of BC, and AE perpendicular to BC, then $DE = \frac{b \cos C \backsim c \cos B}{2}$.

7. Find the radii of the circles which touch one side of a triangle and the other two produced.

Prove (1) $4 R \cos \frac{C}{2} = (a+b) \sec \frac{A-B}{2}$

(2) $\frac{1}{r_1} + \frac{1}{r_2} + \frac{1}{r_3} = \frac{1}{r}$.

(OVER.)

(3) $\frac{r_1+r}{r_1-r}+\frac{r_2+r}{r_2-r}+\frac{r_3+r}{r_3-r}=2.$

8. If α, β, γ be the distances of the centre of the inscribed circle from the angles, prove

$$\alpha\beta\gamma = abc \tan\frac{A}{2}\tan\frac{B}{2}\tan\frac{C}{2}\cdot$$

9. From the top of a cliff 100 yards high, the angles of depression of the top and bottom of a vertical river-bank opposite, are 38° 39′ 36″ and 51° 20′ 24″. Find the breadth of the river and the height of the bank. Given

$\log 2 = \cdot 30103$, $\log\tan 38^\circ 39' = 9\cdot 902928$, $\log\tan 38^\circ 40' = 9\cdot 903198$.

10. Solve

(1) $\text{Cos } 2\theta+\cos 4\theta=2\cos 3\theta$. (2) $1+\sin x=\frac{3}{2}\cos x+\frac{2}{3}\tan x$.

(3) If $\tan\theta=\tan^3\frac{\varphi}{2}$, and $3\cos^2\varphi = m_2 - 1$, then $\cos^{\frac{2}{3}}\theta + \sin^{\frac{2}{3}}\theta = \left(\frac{2}{m}\right)^{\frac{1}{3}}$.

11. A man stands on a wall of height h, and observes the elevation of (α) top of a telegraph pole; he then descends from the wall and observes the elevation (β). Shew that the height of the post exceeds that of the man by $\frac{h\sin\beta\cos\alpha}{\sin(\beta-\alpha)}$.

12. If $A+B+C+D=360^\circ$, then

$$\sin 2A+\sin 2B+\sin 2C+\sin 2D + 4\sin(A+B)\sin(A+C)\sin(A+D)=0.$$

13. Prove Demoivre's Theorem.

Shew how to express an imaginary quantity by means of Trigonometrical functions. Find the three values of $(-1)^{\frac{1}{3}}$.

14. Express the Sin and Cosin of an angle in terms of its circular measure.

15. Sum the sines

(1) $\frac{\cos\phi}{1}+\frac{\cos^2\phi}{2}+\frac{\cos^3\phi}{3}+\cdots$

(2) $\text{Sin }\alpha-\frac{1}{2}\sin 2\alpha+\frac{1}{3}\sin 3\alpha-\frac{1}{4}\sin 4\alpha+\ldots.$

(3) $\text{Sin }\theta\left(\sin\frac{\theta}{2}\right)^2+2\sin\frac{\theta}{2}\left(\sin\frac{\theta}{4}\right)^2+4\sin\frac{\theta}{4}\left(\sin\frac{\theta}{8}\right)^2+\ldots$

16. In any triangle

$$\frac{1}{a}\cos^3\frac{A}{2}+\frac{1}{b}\cos^3\frac{B}{2}+\frac{1}{c}\cos^3\frac{C}{2}=\frac{(a+b+c)^2}{4abc}.$$

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

FIRST CLASS TEACHERS—GRADES A AND B.

GEOMETRICAL OPTICS.

Examiner—J. C. GLASHAN.

1 State the laws of reflection of light.

Determine the position of a luminous point so that its four images formed by one reflection at each of four vertical plane mirrors may lie in a straight line.

2. Determine the geometrical focus of a pencil of rays after direct reflection at a spherical surface.

If a pencil of rays issue from a point P in a diameter AB of a sphere of radius r, and if u and v be the distances from A and B respectively of the geometrical foci after direct reflection from A and B, show that

$$(2r-u+v)\,(r-u+v)=(u+v)^2$$

3. State the laws of refraction of light.

The rays from a luminous point 12 inches above the surface of still water 12 inches deep, enter the water, are reflected from the bottom of the vessel, and emerge. Determine the position of the final image formed.

4. Determine the geometrical focus of a pencil of rays after direct refraction at a spherical surface.

A small pencil of rays directly incident on the surface of a refracting sphere of radius 2 inches, is brought to a focus at a point $3\frac{1}{2}$ inches from the centre of the sphere. Find the refracting index, the origin of the pencil of rays being 10 feet from the centre of the sphere.

5. Show how to determine by experiment the focal length of a lens.

The back of a double convex lens is quicksilvered. A small pencil of rays directly incident on the lens, enters it and is reflected. Find the geometrical focus of the emerging rays.

(OVER.)

6. Describe the Galilean telescope and determine its magnifying power for an eye that cannot see distinctly beyond x feet. What are the advantages and what the disadvantages of this telescope?

The magnifying power of an opera glass when directed to a distant object, is 4, but when adjusted to an object at a distance of 30 feet from the object-glass, the magnifying power is 5. Determine the focal lengths of the eye-glass and the object-glass.

7. Determine the image of a straight line reflected in a spherical concave mirror.

Education Department, Ontario

JULY EXAMINATIONS, 1885.

FIRST CLASS TEACHERS—Grades A and B.

MECHANICS.

Examiner—J. C. Glashan.

1. Prove that the moment of any two coplanar forces with respect to any point in their plane is equal to the algebraic sum of the moments of the forces with respect to the same point.

Four rods jointed at their extremities and forming a quadrilateral capable of being inscribed in a circle are kept in equilibrium by two strings joining the opposite angular points. Show that the tensions of the strings and the stresses along the rods are inversely proportional to the lengths of the respective strings and rods along which they act.

2. Assuming the truth of the parallelogram of forces for the *magnitude*, prove it for the *direction* of the resultant.

A roof weighing 20 lbs. per square foot and having a pitch of 60°, rests on side walls 24 ft. apart. Determine the magnitude and direction of the pressure on the foot of each rafter, they being 4 ft. apart.

3. Two heavy particles of masses, M and m respectively, are connected by a perfectly flexible string of insensible mass, passing over a smooth peg. Determine the motion of each particle and the space passed over by it in the first t seconds after the beginning of the motion.

A balloon which with its attachments and load weighs 1,200 lbs., and which is capable of sustaining 300 lbs. additional but no more, is allowed to rise freely through the air. What would be the weight if the balloon were not ascending, of a mass which in the car of the ascending balloon weighs 10 lbs. on a spring balance?

4. State the principal laws of friction and briefly describe how they may be verified experimentally.

(OVER.)

A body of mass, M, is caused to slide on a rough horizontal plane by a force of m pounds-weight. After acting for t seconds, the force is suddenly withdrawn and the body is allowed to slide on till brought to rest by friction, when it is found that the whole length described from rest to rest again is s feet. Determine the coëfficient of friction.

5. Enunciate the Second Law of Motion, and show that "change of motion" may be interpreted either as time-rate of change of momentum, or as space-rate of change of kinetic energy.

Hence show that if the force be constant $fs=\frac{1}{2}mv^2$.

A particle of mass m, projected with velocity v, at an angle of elevation a, strikes at right angles a plane inclined at an angle θ to the horizon. Find the energy of impact.

6. Enunciate the Third Law of Motion, and show that it may be regarded as a statement of,—1st, the equality of the forces constituting a stress; 2nd, the conservation of momentum; 3rd, the conservation of energy.

A, B, and C are homogeneous spheres whose masses are 4, 2 and 1 respectively, whose common elasticity is $\frac{8}{9}$, and whose centres are in a straight line. B and C are at rest touching each other. A moving with a velocity of 1 ft. per second impinges on B. Determine the positions and velocities of the spheres one second after contact.

7. A particle of mass m, describes a circle of radius r, with uniform velocity v, under the action of a force f directed towards the centre. Show that $fr=mv^2$.

Find the weight of a railway train travelling due west at the rate of 60 miles per hour in the latitude of 45°, the train when at rest weighing 200 tons.

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

FIRST CLASS TEACHERS—GRADE C.

ENGLISH LITERATURE.

Examiner—J. E. HODGSON, M.A.

1. "I do not think that there is an able writer in verse, of the present day, who would not be proud to acknowledge his obligations to the *Reliques*."

(*a*) Give the names of some of the "abler writers in verse" of that day.

(*b*) How was Scott's poetic work affected by the *Reliques*?

2. Compare the narrative portion of the Lady of the Lake, with the lyrical portion, with regard to (*a*) metre; (*b*) sentiment.

3. Give a synopsis of the description of the fight between Fitz-James and Roderick Dhu. What features of the description conduce to (*a*) its picturesqueness; (*b*) its animation?

4.
Now, clear the ring! for, hand to hand,
The manly wrestlers take their stand.
Two o'er the rest superior rose,
And proud demanded mightier foes,
Nor called in vain; for Douglas came.
—For life is Hugh of Larbert lame;
Scarce better John of Alloa's fare,
Whom senseless home his comrades bear.
Prize of the wrestling match, the King
To Douglas gave a golden ring,
While coldly glanced his eye of blue,
Douglas would speak, but in his breast
His struggling soul his words suppressed;
Indignant then he turned him where
Their arms the brawny yeomen bare,
To hurl the massive bar in air.
When each his utmost strength and shewn,
The Douglas rent an earth-fast stone
From its deep bed, then heaved it high,
And sent the fragment through the sky,

(OVER.)

A rood beyond the farthest mark;
And still in Stirling's royal park,
The gray-haired sires, who know the past,
To strangers point the Douglas-cast,
And moralise on the decay
Of Scottish strength in modern day.

(*a*) Illustrate by reference to this extract, differences between prose diction and poetic diction.

(*b*) Distinguish *rime* from *rhythm*. Account for the spelling *rhyme*. What constitutes a perfect rime? Point out an imperfect rime in the extract, and state in what its imperfection consists.

5. What beneficial results should flow from the study of Rip Van Winkle?

6. Illustrate by references to the Rip Van Winkle, Irving's power in (*a*) humor; (*b*) pathos; (*c*) observation.

7. Explain what is meant by saying that "Irving is not a distinctively American writer."

Education Department, Ontario

JULY EXAMINATIONS, 1885.

FIRST CLASS TEACHERS—GRADE C.

ENGLISH LITERATURE.

Examiner—JOHN SEATH, B.A.

NOTE.—*The answer to each question should be as concise as possible, except that to No. 6, to which the Examiner attaches special importance.*

I.—THE HISTORY OF ENGLISH LITERATURE.

1. Show clearly why each of the following is an important name in the history of the development of English Literature:—Chaucer, Shakespeare, Pope, Cowper, Wordsworth.

2. Compare the influences that affected English Literature during the Elizabethan period with those that affected it during the earlier years of the present century.

II.—CORIOLANUS.

3. According to Coleridge, "Coriolanus illustrates the wonderfully philosophic impartiality of Shakespeare's politics": according to Hazlitt, "The arguments for and against aristocracy and democracy, the privileges of the few and the claims of the many * * * * are here ably handled with the spirit of a poet and the acuteness of a philosopher. Shakespeare himself seems to have had a leaning to the arbitrary side of the question; perhaps from some feeling of contempt for his origin; and to have spared no occasion of hating the Rabble."

Support the view you think correct. Characterize Scott's treatment of the same subject in "The Lady of the Lake."

4. Illustrate from this play, as fully as you can, Shakespeare's use of Contrast.

5. Give a list of those incidents that seem to you to throw most light upon the character of Coriolanus. Explain the significance of each.

(OVER.)

6. Describe with as much taste and feeling as you can, the interview in Act V., between Coriolanus and his mother, wife, and son.

7. *Aufidius.* O Marcius, Marcius!
Each word thou hast spoke hath weeded from my heart
A root of ancient envy. If Jupiter
Should from yond cloud speak divine things,
And say, "'Tis true," I'ld not believe them more
Than thee, all noble Marcius.—Let me twine
Mine arms about that body, where against
My grained ash an hundred times hath broke,
And scarr'd the moon with splinters: here I clip
The anvil of my sword: and do contest
As hotly and as nobly with thy love,
As ever in ambitious strength I did
Contend against thy valour. Know thou first,
I lov'd the maid I married: never man
Sigh'd truer breath; but that I see thee here,
Thou noble thing! more dances my rapt heart,
Than when I first my wedded mistress saw
Bestride my threshold. Why, thou Mars! I tell thee,
We have a power on foot; and I had purpose
Once more to hew thy target from thy brawn,
Or lose mine arm for 't: thou hast beat me out
Twelve several times, and I have nightly since
Dreamt of encounters 'twixt thyself and me;
We have been down together in my sleep,
Unbuckling helms, fisting each other's throat,
And wak'd half dead with nothing. Worthy Marcius,
Had we no quarrel else to Rome, but that
Thou art thence banish'd, we would muster all
From twelve to seventy, and pouring war
Into the bowels of ungrateful Rome,
Like a bold flood o'er-bear.

(*a*) What feelings actuate Aufidius? Reconcile his conduct with his previous and his subsequent attitude towards Coriolanus.

(*b*) Write brief explanatory notes on any words with obsolete forms or meanings.

(*c*) What qualities of style are here illustrated? Exemplify.

(*d*) Point out, and show the value of, the chief figures of speech.

(*e*) Write elocutionary notes, bringing out the spirit of the passage.

8. Quote from the play five short passages worthy of being memorized, giving in each case the reasons for your choice.

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

FIRST CLASS TEACHERS—GRADE C.

ENGLISH GRAMMAR.

Examiner—JAS. F. WHITE.

Volumnia. I prithee now, my son,
Go to them, with this bonnet in thy hand;
And thus far having stretched it—here be with them—
Thy knee bussing the stones—for in such business
Action is eloquence, and the eyes of the ignorant
More learned than the ears—waving thy head,
Which often, thus, correcting thy stout heart,
Now humble as the ripest mulberry
That will not hold the handling,—say to them,
Thou art their soldier, and *being bred* in broils
Hast not the soft way which, thou dost confess,
Were fit for thee to use as they to *claim*,
In asking their good loves; but thou wilt fame
Thyself, forsooth, hereafter *theirs*, so far
As thou hast power and person.

Menenius. This but done,
Even as she speaks, *why* their hearts *were* yours;
For they have pardons, being asked, as free
As words to little purpose.

(*a*) Analyze: "I prithee,"—"good loves," ll. 1-13.

(*b*) Parse the words in italics.

(*c*) Point out the figures of speech in the extract, showing the force of each.

(*d*) Give the meaning of "here be with them" l. 3; "waving thy head, which often, thus," ll. 6, 7; "For—purpose," ll. 17-18.

(*e*) Point out and explain any peculiarities in the language or the construction.

2. Show what are the limitations as to the agreement of a verb and its subject in regard to number. Give examples to illustrate your answer.

Discuss the following:—"Cards *were* invented to please a French king." "The three angles of a triangle *are* together equal to two right angles." "There *goes* a pair that only *spoil* each other."

3. Give the derivation of each of the following, with comment upon any fact in English history that it may serve to illustrate:—Avon, Chester, Whitby, cloister, pease, cherry, ox, beef, nuisance, chamber, potion, poison.

(OVER.)

4. Give, *concisely*, your views upon each of these statements:

(*a*) "English Grammar is the art of speaking and writing the Englist language correctly."

(*b*) "There is not an English noun or adjective that has gender."

(*c*) "A pronoun is a word used instead of a noun to prevent its too frequent repetition."

(*d*) "It seems plain that in English there is no passive voice of any verb."

5. What is the force of each of the italicised words, "to *run* wild;" "the day *wears*;" "the shoe *gives*;" "this doctrine *obtained?*" Mention any notable uses of to *task*, to *ring*, to *sit*, to *stand*, to *go*.

6. What part is taken by the verb "have" in conjugating English verbs? Explain the process by which it came to be so used, and discuss the following: —"I *have* a letter;" "I have *written* a letter;" "I *have* come to post it;" "The post *is* gone;" "I *had* rather go than stay."

7. Define prosody, rhythm. Explain the use of accent in English verse. Describe the measure commonly known as blank verse. Give examples.

8. Correct the following, giving reasons:—

(*a*) "A keen eye and graphic pen see and set down for us the characteristic details both of scenery and manners."

(*b*) "Luckily the monks had recently given away a couple of dogs, which were returned to them, or the breed would have been lost."

(*c*) "I could heartily wish that there was the same application and endeavors to cultivate and improve our church music as have been lately betowed upon that of the stage.'

(*d*) "One magistrate reports several robberies of arms; and another adds that the object of the insurgents has not been confined to lowering of rents and tithes, but extended to the refusal of parish dues."

(*e*) "Had Darnley proved the useful Catholic which the Queen intended him to be, they would have sent him to his account with as small compunction as Joel sent the Canaanite captain, or they would have blessed the arm that did it with as much eloquence as Deborah."

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

FIRST CLASS TEACHERS—GRADE C.

COMPOSITION.

Examiner—J. E. HODGSON, M.A.

1. Exemplify each of the following figures, and shew its value in prose composition:—antithesis, asyndeton, epigram, climax.

2. State the main points of difference between narrative style and oratorical style. Write in narrative form the following speech of Roderick Dhu:—

> 'What of thy lady?—of my clan?
> My mother?—Douglas?—tell me all!
> Have they been ruined in my fall?
> Ah, yes! or wherefore art thou here!
> Yet speak—speak boldly—do not fear.'—
> (For Allan, who his mood well knew,
> Was choked with grief and terror too,)—
> 'Who fought—who fled?—Old man, be brief;—
> Some might—for they had lost their Chief.
> Who basely live?—who bravely died?'—
> 'O, calm thee, Chief!' the Minstrel cried,
> 'Ellen is safe;'—'For that thank Heaven!'
> 'And hopes are for the Douglas given;—
> The Lady Margaret, too, is well,
> And, for thy clan—on field or fell,
> Has never harp of minstrel told,
> Of combat fought so true and bold.
> Thy stately Pine is yet unbent,
> Though many a goodly bough is rent.'

3. Write an essay on one of the following subjects:—

(*a*) Colonies.
(*b*) Hero-Worship.
(*c*) Snow.
(*d*) "Nothing Succeeds like Success."

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JULY EXAMINATIONS, 1885.

FIRST CLASS TEACHERS—GRADE C.

HISTORY.

Examiner—J. J. TILLEY.

NOTE.—*Only six questions are to be answered, but of these the first, fourth and eighth must be three.*

1. How did the struggle between Sovereign and Parliament, which led to the accession of William III., affect the civil and religious liberty of the English people?

2. Recount the efforts that were made to restore the Stuarts to the throne of England.

3. Sketch the career of Robert Walpole and of William Pitt, "The Great Commoner."

4. Discuss the policies of the two great political parties in the reign of Queen Anne.

5. Explain the principal constitutional changes during the reigns of George I. and George III.

6. What foreign possessions were acquired in the reign of George II.? Give a short account of the wars by which they were acquired.

7. Write short notes on Viscount Dundee, Duke of Marlborough, St. John (Bolingbroke), Clarkson, John Howard, Robert Clive.

8. Sketch the financial and the reform policy of "The Second Pitt."

9. Write short notes on the First Grand Alliance, Triennial Bill, Peace of Ryswick, Pragmatic Sanction, Treaty of Paris (1783).

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JULY EXAMINATIONS, 1885.

FIRST CLASS TEACHERS—GRADE C.

GEOGRAPHY.

Examiner—CORNELIUS DONOVAN, M.A.

1. What is meant by Circle of Illumination? Declination? Precession of the Equinoxes? Synodic Period? Prime Vertical? Radius Vector? Isotheral Lines? Isochimenal Lines?

2. What are the conditions on which depends the distribution of moisture on the surface of the earth?

Illustrate by reference to the great rainy, and the great rainless, districts of the world.

3. Trace a voyage on the Danube from its source to its mouth, writing notes on all Geographical and Historical points of interest on the route

4. Explain the origin, the characteristics, and the work of rivers. How is soil made?

5. Describe Egypt as to (1) government and races, (2) soil and productions, (3) physical features.

6. What services in nature do mountains perform? Fully illustrate by reference to five of the great mountain chains of Europe. Compare the ethnological values of mountains and valleys.

7 Explain how you would find—

(1) The length of the diameter of the earth.

(2) The length of a degree of longitude at a given latitude.

(3) The latitude and longitude of any place.

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JULY EXAMINATIONS, 1885.

FIRST CLASS TEACHERS—GRADE C.

ARITHMETIC.

Examiner—J. A. McLELLAN, LL.D.

NOTE.—80% *of this paper will be considered a full paper.*

1. "Every operation of Division may be viewed as giving the answer to two different questions." Explain and illustrate this statement.

2. Shew that if the greater of two integers be divided by the other, the greatest common measure of the two numbers is the same as the G. C. M. of *remainder* and *divisor.*

3. Divide the fraction $\frac{17}{18}$ into two such parts that 4 times one of them added to $5\frac{1}{2}$ times the other may make $1\frac{1}{3}$.

4. When a vulgar fraction is to be reduced to a decimal, shew how to determine (*a*) whether the result will be a finite decimal or a pure circulating decimal, or a mixed circulating decimal; (*b*) the number of non-repeating digits in each case.

5. A man barters 120 yds. of silk, which cost $1.50 a yard and sells at $2.50, giving nine months' credit, for cloth which sells at $2 on six months' credit. How much cloth ought he to receive?

6. A, B, C and D together do a work for which A by himself would require two hours less than B. A and B together could do it it $\frac{50}{81}$ of the time C and D together would take, A and C in $\frac{56}{75}$ of the time B and D would take, and B and C in $\frac{65}{66}$ of the time A and D would take. Find the time each person singly would require to do the work.

7. Two trains whose lengths are 420 ft. and 460 feet respectively, pass each other in 30 seconds when moving in the same direction, and in $7\frac{1}{2}$ seconds when moving in opposite directions. Find the rate of each train in miles per hour

(OVER.)

8. The circumference of one circle is $27\frac{1}{2}$ feet longer than that of another, and 11 times the diameter of the first is equal to 5 times the circumference of the second. Find the diameter of each, π being assumed $=3\frac{1}{7}$.

9. Find the square root of ·00013 to within less than a millionth, and the value of $\sqrt{\{(2+\sqrt{(2+\sqrt{2})})\}}$ to within less than a *ten-thousandth.*

10. The length of an iron cylindrical vessel with closed ends is four feet, and its outside circumference is 40 inches, and the thickness of the metal one inch. Find the entire weight when the cylinder is filled with water, iron being $7\frac{1}{9}$ times heavier than water, and water weighing $62\frac{1}{2}$ lbs. per cubic foot.

11. I hold some 3 per cent. stock; on receiving my first half year's dividend I invest it in the same stock at $93\frac{3}{4}$, and my next half year's dividend is $1905. What amount of stock had I at first?

12. (*a*) The area of each of the longer walls of a room is 360 ft., that of each of the other walls is 192 ft., and that of the floor is 480 feet. How many yards (linear) of paper, 18 inches wide, will be needed for the walls, deducting one-twenty fifth of the whole area for doors, &c.

(*b*) Find the depth of a ditch, the transverse section of which is a trapezoid, of which the longer side is 20 ft., the slopes of the sides 2 in 1 and 3 in 1 respectively, and the area 146·25 square feet.

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

FIRST CLASS TEACHERS—GRADE C.

ALGEBRA.

Examiner—J. A. McLELLAN, LL.D.

1. (*a*) Find the value of $5x^5 + 497x^4 + 200x^3 + 196x^2 - 218x - 2001$ when $x = -99$. And of
   (*b*) $x^3 + 3x^2 - 13x - 38$ for $x = 3{\cdot}58443$.

2. Investigate Horner's Method of Division.
   Divide $6x^5 + 5x^4 - 17x^3 - 6x^2 - 10x + 2$ by $2x^2 - 3x + 1$
   And express $x^4 + 8x^3 - 16x - 10$ in powers of $x + 2$.

3. When is an expression
   (1) Symmetrical with respect to two of its letters,
   (2) *Completely* symmetrical with respect to two or more letters? Give examples. State clearly "The Principle of Symmetry."
   Shew that $(2x - y - z)^2 (2y - z - x)^2 + anal + anal$ is a perfect square.

4. If $f(x)^n$ be divided by $x - a$ the remainder is $f(a)^n$ (Prove).
   (1) Find the value of $6a^7 + 9a^5 - 16a^4 - 5a^3 - 12a^2 - 6a + 60$ when $3a^4 + a - 4 = 0$
   (2) Determine the values of p and q which will make $x^{12} - 5x^{10} + 10x^8 - 15x^6 + 29x^4 - px^2 + q$ vanish, if $(x^2 - 2)^2 = x^2 - 3$.

5. Find the G.C.M. of $x^5 - 49x^2 + 116x - 68$ and $x^6 - 21x^2 + 20$
   If 10 be put for x in these expressions and in their G.C.M. examine the resultant, and explain.

6. Find the factors of
   (1) $a^3 + b^3 + c^3 - 3abc$
   (2) $(a - b)(x - a)(x - b) + (b - c)(x - b)(x - c) + (c - a)(x - c)(x - a)$
   (3) $(a + b + c)^5 - (a^5 + b^5 + c^5)$.
   From (1) prove that

$$\frac{x}{1 - x^2} + \frac{y}{1 - y^2} + \frac{z}{1 - z^2} = \frac{4xyz}{(1 - x^2)(1 - y^2)(1 - z^2)} \text{ when}$$

$xy + yz + zx = 1$.

(OVER.)

7. (1) If $(x-y)a^2+(x+y)^2a+(x^2-y^2)(x+y)$ be a complete square find the relation between x and y.

(2) Find the values of n which will make $x^2+nax+a^2$ a factor of $x^4-ax^3+a^2x^2-a^3x+a^4$.

8. Solve the equations:

(1) $\sqrt{(2x^2+1)}+\sqrt{(2x^2+3)}=2(1-x)$.

(2) $\dfrac{ax+b}{ax-b}-\dfrac{bx}{ax+b}=\dfrac{ax}{ax-b}-\dfrac{(ax^2-2b)b}{a^2x^2-b^2}$

(3)
$$\begin{aligned}x+y+z&=3a+b+c\\ x+y+t&=a+3b+c\\ x-z-t&=a+b-c\\ y+z-t&=3a-b-c.\end{aligned}$$

9. A grocer had three casks of wine containing in all 344 gallons. He sells 50 gallons from the first cask; then pours into the first one-third of what is in the second, and then into the second one-fifth of what is in the third, after which the first contains 10 gallons more than the second, and the second 10 more than the third. How much wine did each cask contain at first?

10. Given the sum of an Arithmetical Progression, the first term, and the common difference, find the number of terms (n). Interpret the result when there is a negative value of n.

11. (1) If n geometric means be found between p and q, determine their product.

(2) If x, y, z, are in G. P., shew that

$$x^2y^2z^2\left(\frac{1}{x^3}+\frac{1}{y^3}+\frac{1}{z^3}\right)=x^3+y^3+z^3.$$

12. Give a proof of Binomial Theorem for a positive index. Write down the coëfficient of

x^{2r+1} in the expansion of $\left(x-\dfrac{1}{x}\right)^{2n+1}$

13. (1) Expand $a\sqrt{\left(1-\dfrac{x^2}{a^2}\right)}$ to four terms.

(2) Find the sum of the squares of the coëfficients in the expansion of $(1+x)^n$, where n is a positive integer.

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

FIRST CLASS. TEACHERS—GRADE C.

EUCLID.

Examiner—J. DEARNESS.

Symbols, except those of contractions and operation, may be employed. Use capital letters on the diagrams. It is recommended that each step in the demonstration be begun on a new line.

1. Enunciate Euclid's axiom (or postulate) relating to parallel lines.

Discuss briefly the objections that have been made to it.

Criticize the following substitutes :—

(*a*) Parallel straight lines are constantly equi-distant.

(*b*) Two straight lines which intersect each other cannot be both parallel to the same straight line.

2. In every triangle the square on the side subtending either of the acute angles is less than the squares on the sides containing that angle by twice the rectangle contained by either of these sides and the straight line intercepted between the acute angle and the perpendicular let fall upon it from the opposite angle.

The line drawn from an angle of a triangle to the middle point of the opposite side is equal to half the line joining the extremities of the adjacent sides of the squares described on the sides containing the angle.

3. If one circle touch another internally in any point, the straight line which joins their centres, being produced, shall pass through that point of contact.

Describe a circle with a given centre such that the circle so described and a given circle may touch one another internally.

(OVER.)

4. The angles in the same segment of a circle are equal to one another.

Draw perpendiculars from any two angles of a triangle to the opposite sides; join the ends of the perpendiculars at the right angles, and prove that the angle made by the side adjacent to the said two angles with one of the perpendiculars is equal to that made by the joining line with the other perpendicular.

5. The sum of the squares on any two opposite sides of a quadrilateral inscribed in a circle is equal to the square on the diameter when the diagonals of the quadrilateral cut one another at right angles.

6. To inscribe a regular hexagon in a given circle.

Two circles are such that the area of a regular hexagon inscribed in one is equal to that of an equilateral triangle inscribed in the other, show that their radii are to each other as 1 to $\sqrt{2}$.

7. In a right-angled triangle if a perpendicular be drawn from the right angle to the opposite side, it divides the triangle into parts which are similar to the whole and to one another.

The rectangle under the sides containing the right angle is equal to the rectangle under the hypothenuse and the perpendicular let fall upon it from the right angle.

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

FIRST CLASS TEACHERS—GRADE C.

CHEMISTRY.

Examiner—JOHN SEATH, B.A.

1. State the principles that govern the relation of gases to pressure and to temperature.

One volume of Hydrogen is confined in a flask at 10°C under the ordinary pressure of the atmosphere, added to that of a column of Mercury 60*mm* high. The flask is to be heated to 300°C without any increase taking place in the volume of the gas. How high must the column of Mercury then stand, supposing the atmospheric pressure to increase to 900*mm*?

2. 0·3355 of an organic compound, containing only Carbon, Hydrogen, and Oxygen, gave on combustion 0·6715 gramme of CO_2 and 0·2745 gramme of H_2O, and its vapor density was found to be forty-four times that of Hydrogen. Find its empirical and its molecular formula; and express the latter in the graphic notation.

3. Make a list of (*a*) the impurities of city well-water, (*b*) the sources of such impurities, (*c*) the tests by which you would detect them, and (*d*) the means you would use to purify a given sample of impure water.

4. A powder is given you known to be Carbonate of Soda, Iodide of Potash, Bromide of Potash, Fluor Spar, or Sulphate of Lime. Describe a *simple* mode of determining which it is.

5. 20 grammes of an aqueous solution of HCl were mixed with an excess of Argentic Nitrate. The precipitate, when collected, washed, and dried, weighed 4·53 grammes. Calculate the percentage of HCl in the original solution (Ag=108).

(OVER).

6. Fully describe and explain the following experiments :—

(*a*) Some white Arsenic is boiled with diluted Nitric Acid, and the gas given off is passed into water. To a portion of this solution is added a solution of Permanganate of Potash, and to another a solution of Iodide of Potash and Starch.

(*b*) A test tube containing an aqueous solution of Chlorine is exposed to the strong rays of the sun.

(*c*) Oxygen which has been allowed to bubble through strong Sulphurous Acid is passed through a tube in which is heated some platinum sponge.

(*d*) Some Manganic Dioxide is boiled with an excess of strong HCl. The gas evolved is led into a strong aqueous solution of Potassic Iodide.

(*e*) Some Nitric oxide is mixed with an excess of Hydrogen and passed over moderately heated platinum sponge.

(*f*) A test tube containing a piece of Phosphorus in an aqueous solution of fresh slaked lime is boiled for some time.

7. Explain fully what is meant by the statement that Silicon is an exception to Dulong and Petit's law.

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JULY EXAMINATIONS, 1885.

FIRST CLASS TEACHERS—GRADE C.

HYDROSTATICS AND HEAT.

Examiner—J. C. GLASHAN.

1. Distinguish between amount of pressure and intensity of pressure of a liquid on a submerged surface.

If the intensity of pressure on a surface be variable over the surface, how is the intensity of pressure at any given point measured?

A cube with edge one foot long is immersed in water so that one corner of the cube is just at the surface of the water and the diagonal of the cube from that corner, is vertical. Find the total pressure on the cube and the intensity of pressure at each corner.

2. Distinguish between mass and density, and between density and specific gravity.

How may one determine the specific gravity of an irregular solid insoluble in water, if the density of the solid be (i) greater; (ii) less, than that of water.

A cylindrical copper wire 44 yds. long, weighs 23,000 grains in the air, but only 20,400 in water. Find its volume, density and mean section.

3. State the relation between the volume, density and intensity of pressure of a perfectly elastic gas kept at constant temperature.

In performing the Torricellian experiment, $\frac{1}{3}$ inch of the tube is left occupied with air at atmospheric pressure. After the inversion, this air expands till it occupies 11 inches of the tube while the column of mercury below it is sustained at a height of 28·8 inches. Find the correct barometric height.

4. "There have been two distinct theories regarding the nature of heat." State these theories and describe any experimentum crucis between them.

What assumption was made by Mayer in his determination of the Mechanical Equivalent of heat? (OVER.)

How much mechanical energy is necessary to melt 10 lbs. of ice at 32° F.?

5. Distinguish between temperature and quantity of heat.

If the temperature of a body be increased, what is, in general, the effect on the volume of the body. State some remarkable exceptions to this law.

Describe some form of air-thermometer and enumerate its advantages and its disadvantages.

Find the least distance between the consecutive rails on a line of railway which will allow of the expansion due to an increase of temperature of 70° F., the rails being 11 yards long and the coëfficient of expansion being .000007 per degree Fahrenheit.

6. Describe briefly the three methods by which heat is conveyed from one place to another.

Describe experiments showing that radiant heat is capable of reflection, refraction and absorption.

Give a brief statement of Prevost's theory of exchanges.

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

FIRST CLASS TEACHERS—GRADE C.

ELEMENTARY MECHANICS.

Examiner—J. C. GLASHAN.

1. Define velocity, constant velocity, variable velocity and uniformly accelerated velocity. Explain how the mean velocity during a given time and the velocity at a given moment are determined and expressed.

State the law of composition of rectilinear motions and the law of composition of velocities.

A boy throws a stone at a railway train travelling at the rate of 30 miles per hour. If the stone be thrown at right angles to the railway track and if the horizontal component of its velocity relative to the ground be 66 ft. per second, what will be its horizontal component relative to the train? (Draw a figure to illustrate your solution, marking on it the direction of the motions).

2. How are forces generally measured in statics and how in dynamics? Define any statical unit of force, and also any dynamical unit of force, and compare their magnitudes.

State the law of composition of concurrent forces.

A, B, C, D, are the angular points taken in order of a square with two-inch sides. A force of 8 lbs. acts from A towards B, one of 1 lb. from A towards D, one of 8 lbs. from C towards B, and one of 20 lbs. from C towards D. Determine the resultant of these four forces. (Draw the figure, representing the forces on a scale of 8 lbs. to the inch).

3. Define moment of a force, couple, arm of a couple and moment of a couple.

State the principle of moments, the law of the composition of parallel forces and the laws of the composition of couples.

A uniform rod 6 ft. long and weighing 6 lbs. has weights of 2 lbs., 3 lbs., 4 lbs. and 5 lbs. suspended on it, in order, at distances 2 ft. apart. Determine the point about which it will balance, and the pressure on the point.

(OVER.)

Had the 2 lbs., the 3 lbs. and the 5 lbs. all been upward pressures instead of weights, what would have been the resultant?

4. Distinguish between mass and weight, force and acceleration, force and working-power (rate of doing work), momentum and energy.

A mass of 6 moving from rest under the action of a constant force acquires in 5 seconds a momentum of 150. Determine the force and the acceleration, also the velocity, the kinetic energy and the working-power at the end of the 5 seconds.

5. State Newton's laws of motion.

A mass of 10 lbs. is urged along a rough horizontal plane by a force equal to the weight of 3 lbs., acting parallel to the plane, the coëfficient of friction being ·05. Determine the acceleration.

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JULY EXAMINATIONS, 1885.

SECOND CLASS TEACHERS.

ENGLISH LITERATURE.

Examiner—JOHN SEATH, B.A.

NOTE.—200 *marks constitute a full paper. In valuing the answers, marks will be deducted for bad literary form.*

Values.

12 1. State concisely the influences that affected Literature about the beginning of the nineteenth century, illustrating your answer by reference to "The Lady of the Lake" and "Rip Van Winkle"

15 2. What personal characteristics of the authors appear in "The Lady of the Lake" and "Rip Van Winkle"? Refer to one passage in exemplification of each.

10 3. Quote the "Coronach" (Canto III), or Ellen's "Song" (Canto I).

4. 'Now, yield thee, or by Him who made
The world, thy heart's blood dyes my blade!'—
'Thy threats, thy mercy, I defy!
Let recreant yield, who fears to die.'
—Like adder darting from his coil,
Like wolf that dashes through the toil,
Like mountain-cat who guards her young,
Full at Fitz-James's throat he sprung;
Received, but recked not of a wound,
And locked his arms his foeman round.—
Now, gallant Saxon, hold thine own!
No maiden's hand is round thee thrown!
That desperate grasp thy frame might feel,
Through bars of brass and triple steel!—
They tug, they strain! down, down they go,
The Gael above, Fitz-James below.
The Chieftain's gripe his throat compressed,
His knee was planted in his breast;
His clotted locks he backward threw,
Across his brow his hand he drew,
From blood and mist to clear his sight,
Then gleamed aloft his dagger bright!—

Values.

—But hate and fury ill supplied
The stream of life's exhausted tide,
And all too late the advantage came,
To turn the odds of deadly game;
For, while the dagger gleamed on high,
Reeled soul and sense, reeled brain and eye.
Down came the blow! but in the heath
The erring blade found bloodless sheath.
The struggling foe may now unclasp
The fainting Chief's relaxing grasp;
Unwounded from the dreadful close,
But breathless all, Fitz-James arose.

6+6 (*a*) *Ll.* 1 and 2. Show that this exclamation is in harmony with Fitz-James's character. Contrast his conduct here with Roderick's, in *ll.* 17-30.

4×3=12 (*b*) *Ll.* 5-7. Show the appropriateness of each of these similes.

4×4=16 (*c*) Develop the meaning of "No maiden's hand", "was "planted in his breast", "life's exhausted tide", "Reeled soul and sense, reeled brain and eye".

24 (*d*) Point out in detail how force and vividness have been given to the description in ll. 5-34.

16 (*e*) Write concise elocutionary notes, bringing out as fully as possible the spirit of the passage.

6+6 5. Explain the terms "Satire" and "Humor", giving examples from "Rip Van Winkle".

20 6. Describe the Rip Van Winkle household.

7. Times grew worse and worse with Rip Van Winkle as years of matrimony rolled on; a tart temper never mellows with age, and a sharp tongue is the only edge-tool that grows keener with constant use. For a long while he used to console himself, when driven from home, by frequenting a kind of perpetual club of the sages, philosophers, and other idle personages of the village; which held its sessions on a bench before a small inn designated by a rubicund portrait of His Majesty George the Third. Here they used to sit in the shade through a long summer's day, talking listlessly over village gossip, or telling endless sleepy stories about nothing. But it would have been worth any statesman's money to have heard the profound discussions that sometimes took place, when by chance an old newspaper fell into their hands from some passing traveller. How solemnly they would listen to the contents, as drawled out by Derrich Van Bummel, the

Values.

school-master, a dapper learned little man, who was not to be daunted by the most gigantic word in the dictionary; and how sagely they would deliberate upon public events some months after they had taken place,

8 + 2 (*a*) *A tart—constant use.* Develop the metaphors here. How is this sentence connected in sense with the preceding one?

6 (*b*) *Here they—about nothing.* Point out the artistic excellence of this sentence.

4 × 4 = 16 (*c*) *But it would—traveller.* Comment on the literary form of this sentence. Give the force of "But", "worth any statesman's money", and "fell".

2 × 6 = 12 (*d*) Distinguish the meanings of "console" and "comfort", "sages" and "philosophers", "personages" and "characters", "sessions" and "sittings", "rubicund" and "red", and "dapper" and "neat".

3 × 3 = 9 (*e*) Show, from the derivation, the exact meaning of "designated" "listlessly", and "discussions".

2 + 8 (*f*) What English writer is imitated in this passage? Quote the lines Irving had in mind.

8 (*g*) What characteristics of Irving's style are here exemplified? Refer to the illustrations of each.

8. Write concise critical and explanatory notes on the following passages*:—

6 (*a*)
But Ellen boldly stepped between,
And dropped at once the tartan screen:
So, from his morning cloud, appears
The sun of May, through summer tears.

10 (*b*)
I'll listen till my fancy hears
The clang of swords, the crash of spears!
These grates, these walls, shall vanish then
For the fair field of fighting men,

24 (*c*)
Hark! as my lingering footsteps slow retire,
Some Spirit of the Air has waked thy string!
'Tis now a seraph bold, with touch of fire,
'Tis now the brush of Fairy's frolic wing.
Receding now, the dying numbers ring
Fainter and fainter down the rugged dell,
And now the mountain breezes scarcely bring
A wandering witch-note of the distant spell—
And now, 'tis silent all!—Enchantress, fare thee well."

---

*In answering this question, the candidate will be expected to explain and comment on the chief difficulties only, and to point out any blemishes and develop any beauties of thought or expression.

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

SECOND CLASS TEACHERS.

ENGLISH GRAMMAR.

Examiner—JOHN SEATH, B.A.

Values.

12 1. Describe, in your own words, the function of the pronoun, explaining clearly the meaning of the expression, "used instead of a noun", and applying your description to each of the following:—

I, thou, he, each, this, many.

2. "Inflections are changes of form which some parts of speech undergo according to differences in their meaning, or differences in the connection in which they are used."

8 (*a*) Classify according to the preceding definition *all* the inflections in the appended sentence.

10 (*b*) Give the name, and a suitable definition, for each inflection so classified.

6 (*c*) State, with reasons, which of these inflections modern English might dispense with.

Knewest thou that these women's tempers were sorely tried by his excessive talking?

3. Rewrite the following statements, making such corrections as you consider necessary, and assigning your reasons therefor:

6 (*a*) *As* is used as a relative after *such, same, as many, so many, as much, so much.*

6 (*b*) Any set of words expressing the relations of an adverb is called an "adverbial phrase": as, "it is *all over* with you".

9 (*c*) When two clauses of a sentence joined by a conjunction are connected with a third clause by *than*, this last clause must be adapted in construction to both of the preceding: as, "I will do as much or more work than James" should be "I will do as much work as James or more".

Values.

4. Distinguish the meanings of :—

4 (*a*) *He has done the work* and *He has the work done.*

4 (*b*) *What shall you do to-morrow?* and *What will you do to-morrow?*

4 (*c*) *I told him I would not go* and *I told him I should not go.*

4 (*d*) *He knew who should betray him* and *He knew who would betray him.*

5. Classify and give the syntax of the italicized words in the following :—

3+3 (*a*) *To please* me, he put on his best coat and looked his *best.*

3×3=9 (*b*) He left me at home *in* poverty, *to* the surprise of the lord of the *manor*'s family.

3×4=12 (*c*) Since my residence here, the fear of *being surprised* has made him *accustomed to come* early: he used *to come* late.

3+3 (*d*) He is out of breath *running* this *distance.*

6. Write out fully in the prose order each clause in the following, classifying it and giving its relation :

24
When in the woods I wander all alone,
The woods that are my solace and delight,
Which I more covet than a prince's throne,
My toil by day and canopy by night;
(Light heart, light foot, light food, and slumber light,
These lights shall light us to old age's gate,
While monarchs, whom rebellious dreams affright,
Heavy with fear, death's fearful summons wait;)
Whilst here I wander, pleased to be alone,
Weighing in thought the world's no happiness,
I cannot choose but wonder at its moan,
Since so plain joys the woody life can bless;
Then live who may where honied words prevail,
I with the deer, and with the nightingale!

7. [*a*] Analyze each of the following, giving the force of the root-words, prefixes, and suffixes :—

3 [1] *prolonging, displeasure, suppression.*

3 [2] *reflection, prosperous, confidential.*

Values.

[*b*] Translate into a derivative each of the following:—

3 [1] *to lead in a wrong direction, to daze often, one who writes for the daily papers.*

3 [2] *to make great, a breaking up in different directions, a taking away from.*

8. Correct any errors in the following, giving in each case your reason:—

9 [*a*] The strongest effluvia I ever felt has come from the spot of which I did not know and did not then see.

12 [*b*] Mr. Smith presents his compliments to Mr. Jones, and finds he has a cap which is not mine. So, if you have a cap which isn't his, no doubt they are the ones.

12 [*c*] It was her firm belief that all unhappy marriages dated only from the wife: and that the coldness as well as the independence, and want of the adoring faculty generally in women, were the sole causes of matrimonial disagreement.

6 [*d*] He has now the management of the institution, and his success or otherwise will show who among them we are to consider responsible for its past record.

3 [*e*] Heaven forbid that I should refuse him and he a gentleman!

3 [*f*] My intentions are good, but my execution faulty.

4 [*g*] My object in this communication is to express a hope that the members may, each as far as lies in his power, exert their influence to obtain its removal.

9 [*h*]
I ne'er before, believe me, fair,
Have ever drawn your mountain air,
Till on the lake's romantic strand,
I found a fay in fairy land.

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

SECOND CLASS TEACHERS.

HISTORY.

Examiner—JAS. F. WHITE.

NOTE,—*Not more than five questions, of which 7 and 8 must form two, are to be attempted.*

Values.	
20	1. Sketch the history of England from the withdrawal of the Romans to the landing of the Conqueror, having regard especially to the geographical distribution and civilizing influences of the different races that occupied the country during that period.
20	2. Give an account of the relations that existed between England and Scotland during the Stuart rule.
20	3. What causes led to the passing of the Act of Union? What were its principal terms and what its effects?
20	4. Write a concise account of the Wars of the Roses, showing their effect upon the liberty and social life of England.
20	5. Relate the important events of the reign of William III. Give an estimate of his personal character.
20	6. Discuss the views of government held by the Tudors and Stuarts respectively. How did the circumstances of the time affect their endeavors to put these views into practice?
20	7. Describe the circumstances under which the several provinces of the Confederation were settled.
20	8. Sketch the constitutional growth of Canada.

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

SECOND CLASS TEACHERS.

GEOGRAPHY.

Examiner—JAS. F. WHITE.

Values.

1. Briefly explain:

4 (*a*) Why we have *four* seasons while there are but *two* within the tropics.

4 (*b*) Why some regions, like the Sahara, are rainless, while almost constant rains fall in other places, as Guiana.

4 (*c*) How the latitude of a place is determined.

15 2. Write a paper upon the various Territories of Canada, describing their position, extent, physical features, climate, resources, and settlement.

20 3. Sketch the southern coast of Europe, marking the adjacent islands, gulfs or bays, straits, river mouths, and principal cities.

13 4. Name the British possessions in Africa, giving the position, products, and chief physical features of each.

20 5. "On the configuration of the coast-line depends much that relates to the climate as well as to the industry and commerce of a country." Show this dependence as fully as possible and illustrate by reference to different countries.

20 6. Choose *one* of the following countries and sketch its physical features; tell what races inhabit it, what languages are spoken, what its productions and industries are; and give an account of its political and social condition:—

Egypt, Mexico, Germany, Brazil, Persia.

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

SECOND CLASS TEACHERS.

ARITHMETIC.

Examiner—J. J. TILLEY.

NOTE.—*Eight questions will be considered a full paper, but the 5th and 10th must be taken.*

Values.

25 1. A man bought a house which cost him 4 per cent. on the outlay to put it in repair; it remained empty for a year, during which time he reckoned he was losing 5 per cent. on his total outlay. He then sold it for $1192, which paid for repairs and loss and also gave a profit of 10 per cent. on the cost price of the house. Find the cost price.

25 2. A railway train moving with uniform speed is met and passed in 5 seconds by an engine and tender $30\frac{2}{3}$ feet long and running 30 miles an hour; the engine and tender return shortly afterwards and pass the train in 25 seconds after overtaking it. Find the length of the train.

25 3. A person invested $8420 in 8 per cent. stock on the 7th day of January at $109\frac{1}{2}$, and on the 12th day of February of the same year sold it out at $117\frac{1}{2}$, paying $\frac{1}{4}$ per cent. brokerage on each transaction. Find his gain per cent. on what the stock cost him—money being worth 8 per cent. per annum (360 days).

25 4. A merchant bought 3885 yds. of cloth and marked it at an advance of $33\frac{1}{3}$ per cent. on cost; in selling the first half of it he gave only 35 inches for a yard, but in selling the remainder he gave 37 inches for a yard. He gained on the whole transaction $3897. What did the cloth cost him per yard?

20 5. I bought French goods for 7490 francs, and paid an import *ad valorem* duty of 15 per cent. I sold the goods for £420. Find my gain or loss in dollars and cents if the £ = fr. 25·22 = $4.87

[OVER.[

Values.	
25	6. I invested in 7 per cent. stock at $78\frac{1}{8}$, and having received a half-year's dividend I sold out at $79\frac{3}{8}$, paying $\frac{1}{8}$ per cent. brokerage on each transaction, and increased my capital altogether by $292.50. How much did I invest?
25	7. In an election 15 per cent. of the constituency refused to vote; of two candidates, one received 45 per cent. of the votes in the constituency and was elected by a majority of 150; find the number of votes cast for each.
25	8. A person bought a quantity of goods for $224, payable in 2 months, and sold them at once for $274 payable in 4 months. Find the gain in ready money allowing trade discount at 6 per cent per annum.
25	9. A B, and C walk from P to Q, each at a uniform rate, A's rate being equal to $\frac{4}{5}$ of C's, and B's rate was 4 miles an hour. B started 45 minutes after A, and C started 27 minutes after B. They all arrived at Q at the same time. Find the distance from P to Q.
30 15+15	10. (i) A triangle, altitude 60 feet, is bisected by a line drawn parallel to the base. Find the perpendicular distance between the base and the dividing line. (ii) The areas of the several faces of a rectangular solid are 57, 27 and 19 square feet. Find its dimensions.

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

SECOND CLASS TEACHERS.

ALGEBRA.

Examiner—J. C. GLASHAN.

Values.

10 1. From $a(b+c)^2+b(c+a)^2+c(a+b)^2$ take

$$(a-b)(a-c)(b+c)+(b-c)(b-a)(c+a)+(c-a)(c-b)(a+b).$$

10 2. Multiply

$$\frac{x}{a}-\frac{a}{x}-\frac{y}{b}+\frac{b}{y}$$

by

$$\frac{x}{a}-\frac{a}{x}+\frac{y}{b}-\frac{b}{y}$$

15 3. Divide

$$(x^3-1)(a^3-a^2)-(x^2-1)(a^2-4a)+3(x+2)(a-1)+3$$

by

$$ax^2+(x+1)(a-1).$$

10 4. Resolve $2-\dfrac{b^2+c^2-a^2}{bc}$ into the product of two factors.

20 5. It being given that

$$2(a^4+b^4+c^4+d^4)-(a^2+b^2+c^2+d^2)+8abcd$$

is the product of four linear factors of which one is

$$a+b+c+d,$$

show how to deduce therefrom what the other factors *must* be.

20 6. Prove that if

$$\frac{ab}{cd}=\frac{a^2+b^2}{c^2+d^2}$$

then will

$$\frac{AB}{CD}=\frac{A^2+B^2}{C^2+D^2},$$

wherein $A=a+b+c+d,\quad C=a-b+c-d,$

$B=a+b-c-d,\quad D=a-b-c+d.$

[OVER.]

Values.

15 7. Solve $\sqrt{x}-\sqrt{5}=\sqrt{(x-5)}$

15 8. Determine a, b and c so that the two systems of equations

$$\left.\begin{aligned} ax+by-cz&=4,\\ ax-by+cz&=8,\\ -ax+by+cz&=16,\end{aligned}\right\}\text{ and }\left\{\begin{aligned} 2x-y+3z&=9,\\ 3x+2y-2z&=1,\\ -x+y+z&=4.\end{aligned}\right.$$

may be satisfied by the same values of x, y and z.

15 9. Solve

$$(1-x)(x-2)+(3-x)(x-4)-(5-x)(x-10)=0$$

20 10. The circumference of the hind-wheel of a carriage is greater by one yard than that of the front-wheel, but in travelling sixty-three yards, the front-wheel makes four revolutions more than the hind-wheel. Find the circumference of the hind-wheel.

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

SECOND CLASS. TEACHERS.

EUCLID.

Examiner—J. DEARNESS.

NOTE.—*Symbols, except of operation, may be employed. Use capital letters with the diagrams. It is recommended that each step in the demonstration begin on a new line.*

Values.	
3	1. When is one proposition said to be the converse of another?
3	State the converse proposition of I. 41, (If a parallelogram and a triangle be upon the same base, &c.).
3	Show by an example that the converse of a true proposition is not necessarily true.
10	2. If one side of a triangle be produced the exterior angle is greater than either of the interior opposite angles. (I. 16.)
10	3. In the figure of the preceding, let AC be the side bisected in E, and produce BE to F; similarly bisect BC in H, join AH and produce it to L; join LB and FA and produce them to meet in M. Show that the triangle FML is quadruple of the triangle ABC.
8	4. Show whether the angles of a triangle can be changed without changing (shortening or lengthening) the sides.
8	Also whether the angles of a quadrilateral (as of a rhombus) can be changed without changing the length of the sides.
10	5. If the vertical angle of an isosceles triangle is two-thirds of two right angles the square on the base is equal to three times the square on one of the equal sides.

[OVER.]

Values.	
10	6. If a straight line be divided into any two parts the square on the whole line is equal to the squares on the two parts together with twice the rectangle contained by the parts. (II. 4.)
4	Enunciate the geometrical proposition expressed by the equation $(a+b+c)^2=a^2+b^2+c^2+2ab+2bc+2ca$.
4	Construct it geometrically.
10	7. If a straight line be divided into any two parts, the squares on the whole line and on one of the parts are equal to twice the rectangle contained by the whole and that part together with the square on the other part. (II. 7.)
4	Show from the demonstrations of II. 4, and II. 7, that the square on the sum of two lines is as much greater than the sum of their squares as the latter is greater than the square of the difference.
3	Illustrate the same truth algebraically.
10	8. Divide a given straight line into two parts so that the rectangle contained by the whole and one of the parts shall be equal to the square on the other part. (II. 11.)
4	Shew algebraically that the square on the sum of the whole line and the lesser segment is equal to five times the square on the greater segment.
10	9. In every triangle the square on the side subtending any of the acute angles is less than the squares on the sides containing that angle by twice the rectangle contained by either of these sides and the straight line intercepted between the perpendicular let fall upon it from the opposite angle, and the acute angle. (II. 13). Deal only with the case of the obtuse-angled triangle.

(Total 114. *Count* 100 *marks a full paper.)*

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

SECOND CLASS TEACHERS.

CHEMISTRY.

Examiner—JOHN SEATH, B.A.

Values.

6 + 6 1. Describe experiments to illustrate the general properties of acids, bases, and salts. Classify, if possible, the following under these heads, assigning your reason in each case:—

$$H_2S,\ KHO,\ CO_2,\ CaCO_3,\ H_2CO_3,\ CaO.$$

6 2. Describe and explain fully one process by which you would disinfect a badly smelling drain.

4 + 4 3. State in each case the simplest mode of determining when a receiver is full, in the preparation of Ammonia, Chlorine, Carbon Dioxide, and Sulphur Dioxide. How would you transfer each of these gases from one receiver to another?

8 + 4 4. Describe experiments to show the nature and properties of Sulphur. How much air is needed to burn completely 4 oz. of Sulphur?

5. Fully describe and explain the following experiments:

- 4 (*a*) Some strong Sulphuric Acid is poured on a piece of zinc, and after the chemical action has ceased, water is carefully added.
- 3 × 3 = 9 (*b*) Carbon Dioxide is passed for some time through lime-water, A portion of the clear solution thus obtained is boiled; another portion of it is exposed for an hour or so to the air; and, to another portion, lime-water is added.
- 2 × 4 = 8 (*c*) Some distilled water is shaken up in each of the full receivers mentioned in 3 above.
- 5 (*d*) Some Chlorine gas is exposed to the air in an open receiver.
- 3 (*e*) One volume of Hydrogen is mixed with one volume and a half of Chlorine, and the mixture exposed to the action of diffused sunlight.

2 × 4 = 8 6. You are given a powder known to be Carbonate of Ammonia, Phosphate of Soda, Nitrate of Lead, or Chlorate of Potash. Describe the simplest mode of determining which it is.

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

SECOND CLASS TEACHERS.

PHYSICS.

Examiner—J. C. Glashan.

N. B.—Candidates who take Latin, or French, or German, as an option will omit questions 1 to 5 of this paper.

Values.

15 1. Two forces, one of 5 lbs., the other of 10 lbs., act in directions making with each other an angle of 120°. Find the magnitude of their resultant.

15 2. Prove that if the angle between the lines of action of two forces be decreased, their resultant will be increased.

10 3. A rod, *MN*, weighing 8 oz., is found to balance about a point 8 in. from *M*. A weight of 4 oz. is then fastened to the rod at *M*; what will be the distance from *M* of the point about which the rod will now balance?

20 4. What is meant by the term *specific gravity*?

Describe any instrument for determining the specific gravity of liquids and explain the principle of its action.

15 5. What is the difference between the total pressure of the air on the floor and that on the ceiling of a room 20 ft. long by 14 ft. wide by 10 ft. high?

30 6. "We have strong reasons for thinking that heat is really a kind of vibratory motion." (*Stewart*; p. 62.)

"We can not only change actual energy into heat but we can change heat back again into actual energy." (*Stewart*; p. 105.)

Show that these statements are inconsistent. Which of them is correct? State correctly what was intended to be expressed by the other.

25 7. "The latent heat of steam is 537." Explain the meaning of this statement.

What becomes of all this heat; what work does it do?

20 8. "You see how it is possible, by making and breaking contact of a wire with the pole of a battery, to move a magnetic needle 1,000 miles away."

Briefly explain how it is possible.

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

THIRD AND SECOND CLASS TEACHERS.

COMPOSITION.

Examiner—J. E. Hodgson, M.A.

Values.

21 1. Write sentences illustrating clearly the difference between:—ability, capacity; convoke, convene; crime, vice; bring, fetch; hope, expect; counsel, council; hanged, hung.

2. Correct the following:—

5 (*a*) By this means it is anticipated that the time from Europe will be lessened two days.

5 (*b*) It was him that Horace Walpole called a man who never made a bad figure but as an author.

5 (*c*) In Jeremy Taylor we find some of the best examples of long sentences which are at once clear and logical.

3 (*d*) The vice of covetousness of all others enters deepest into the soul.

3 (*e*) Observers who have recently investigated this point do not all agree.

3 (*f*) Shakespeare the noblest name in literature was born at Stratford.

25 5. Write out in the form of indirect narration the substance of the following extract:—

'Fair dreams are these,' the maiden cried
(Light was her accent, yet she sighed),
'Yet is this mossy rock to me
Worth splendid chair and canopy;
Nor would my footsteps spring more gay
In courtly dance than blithe strathspey,
Nor half so pleased mine ear incline
To royal minstrel's lay as thine.

[OVER.]

Values.

And then for suitors proud and high,
To bend before my conquering eye,
Thou, flattering bard! thyself wilt say,
That grim Sir Roderick owns its sway.
The Saxon scourge, Clan-Alpine's pride,
The terror of Loch Lomond's side,
Would, at my suit, thou know'st, delay
A Lennox foray—for a day.'—

30 6. Write a short descriptive essay on one of the following subjects. :—

(*a*) Autumn in Ontario.
(*b*) An out-door sport.
(*c*) School-life.
(*d*) The discovery of America.

Education Department, Ontario

JULY EXAMINATIONS, 1885

SECOND AND THIRD CLASS TEACHERS.

ORTHOËPY AND PRINCIPLES OF READING.

Examiner—J. Dearness.

Values.

1. Be good, dear child, and let who will be clever;
Do noble things, not dream them all day long;
And so make life, death, and that vast forever,
One grand sweet song.

Copy this stanza:

5 (*a*) marking the pauses, longer and shorter, || and | respectively; and

5 (*b*) underlining the emphatic words.

8 (*c*) Give reasons for the pauses and the emphases in the second line.

2. Abou Ben Adhem—may his tribe increase!—
Awoke one night from a deep dream of peace,
And saw within the moonlight in his room,
Making it rich, and like a lily in bloom,
An angel, writing in a book of gold.

2 (*a*) With what quality or tone of voice should this be read?

4 (*b*) How should the connection between "saw" and "angel" be shown?

3. *Shy.* Signior Antonio, many a time and oft,
In the Rialto, you have rated me
About my moneys and my usances:
Still have I borne it with a patient shrug;
For sufferance is the badge of all our tribe.
You call me misbeliever, cut-throat, dog,
And spit upon my Jewish gaberdine,
And all for use of that which is mine own.
Well then, it now appears you need my help:
Go to, then; you come to me, and you say,
Shylock, we would have moneys: you say so;
You that did void your rheum upon my beard,

(OVER.)

Values.

And foot me as you spurn a stranger cur
Over your threshold: moneys is your suit,
What should I say to you? Should I not say,
Hath a dog money? is it possible
A cur can lend three thousand ducats? or
Shall I bend low, and in a bondman's key,
With bated breath and whispering humbleness,
Say this,—
Fair sir, you spit on me on Wednesday last?
You spurn'd me such a day; another time
You call'd me dog; and for these courtesies
I'll lend you thus much moneys?

5 (*a*) To what predominant feelings or passions should expression be given in reading this passage? How may they be expressed?

8 (*b*) Distinguish between Pitch and Force, and show where they should be varied in reading this passage.

4×2= (*c*) Give directions as to the reading of: line 5, "Well
8 then" l. 9, "Go to" l. 10, "You" l. 12, and lines 16
6 and 17.

8 (*d*) Mark the inflection of "Antonio", l. 1; "Shylock", l, 11; "say", l. 15; "or", l. 17; "this", l. 20; "day" l. 22; "dog", l. 23; "moneys", l. 24.

3 (*e*) Illustrate Stress by reference to line 13.

10 4. Divide the following words into syllables, and mark the quantity of the vowels, and the accent:

gaberdine, ducats, Wednesday, dynamite, trichina, menengitis, gladiolus.

5 5. What is the sound of:

(*a*) *u* in *column, blue, rule.*

(*b*) *th* in *with, withe, beneath.*

(Count 50 marks a full paper.)

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

SECOND AND THIRD CLASS TEACHERS.

DICTATION.

Examiner—CORNELIUS DONOVAN, M.A.

Note for the Presiding Examiner.—This paper is not to be seen by the Candidates. It is to be read to them *three times*—*first*, at the ordinary rate of reading, they simply paying attention, to catch the drift of the passage; *second*, slowly, the candidate writing; *third*, for review.

VALUE, 50.

It is no pleasure to me, in revising my volumes, to observe how much paper is wasted in confutation. Whoever considers the revolutions of learning, and the various questions of greater or less importance, upon which wit and reason have exercised their powers, must lament the unsuccessfulness of inquiry, and the slow advances of truth, when he reflects that a great part of the labor of every writer is only the destruction of those who went before him. The first care of the builder of a new system is to demolish the fabrics which are standing. The chief desire of him that comments an author is to shew how much other commentators have corrupted and obscured him. The opinions prevalent in one age, as truths above the reach of controversy, are confuted and rejected in another, and rise again to reception in remoter times. Thus, the human mind is kept in motion without progress. Thus, sometimes, truth and error, and sometimes, contrarieties of error, take each other's place by reciprocal invasion. The tide of seeming knowledge, which is poured over one generation, retires and leaves another naked and barren; the sudden meteors of intelligence, which, for a while, appear to shoot their beams into the region of obscurity, on a sudden withdraw their lustre, and leave mortals again to grope their way.

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

THIRD AND SECOND CLASS TEACHERS.

WRITING.

Examiner—J. Dearness.

Values. *(To be written but once.)*

25 1. Copy these lines:

A thing of beauty is a joy forever:
Its loveliness increases; it will never
Pass into nothingness; but still will keep
A bower quiet for us, and a sleep
Full of sweet dreams, and health, and quiet breathing.
Therefore on every morrow we are wreathing
A flowery band to bind us to the earth.

30 2. Copy: Llanfyllin, Feb'y 25th, 1885.

Messrs. Ardagh, Gligg & Co.,

Dr. To Messrs. McGillivray & Houghton,

Jan. 19th.	175lbs. Java Coffee - @	$0.28½	$49.87½
	225 " Eleme Figs - @	12½	28.12½
	2bbls. Zante Currants @	12.00	24.00
Feb'y 7th.	3 h'f chests Mucol'd Japan Tea, 165 lbs. - @	37½	61.87½
	1 bbl. Bordeaux Vinegar @	$10.00	10.00
	2 bags Rio Coffee Gross. Tare. 142 – 13 139 – 12 281 – 25 = 256 @	.38	97.28
			$271.15½
	Less 3 %	-	8.13½
			$263.02

Rec'd pay't,

McGillivray & Houghton,
per Keighley.

] over.]

Values.	
10	3. Write as for titles in a Ledger (half text hand): Mdse., Bills Receivable, H. K. McKenzie & Co.
10	4. Write on ruled spaces (five): flighty, glyph, tryst.

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

THIRD AND SECOND CLASS TEACHERS.

DRAWING.

Examiner—J. A. McLellan, LL.D.

Values.

1. Illustrate by means of *pencil* drawings—no rulers to be used; distances to be judged by the aid of the eye, alone:

2 (*a*) A reverse curve with both upper and lower parts ovoid in character, base of reverse curve 3 inches long and upright, bases of the two parts of the curve, proportioned as 1 to 2.

2 (*b*) Three parallel straight lines $1\frac{1}{2}$ inches long, in left oblique position, lines about $\frac{1}{8}$ of an inch apart.

2 (*c*) A perpendicular, to a right oblique line, each about 1 inch long.

4 (*d*) A square, of 2 inches side, resting on one of its angles (corners), with one of its diagonals upright.

5 (*e*) An oval with diameters in the proportion of 1 to 2 inches, the longer diameter, in the left oblique position, making an angle of about 45 degrees with a horizontal.

5 (*f*) An upright view of a cone, with base above the line of sight, altitude 2 inches; horizontal diameter of base 1 inch.

8 (*g*) A water bottle in an upright position, with neck based upon a square of $\frac{1}{2}$ inch side; body based upon a circle about $1\frac{1}{2}$ inches in diameter—apply the reverse curve in the outline of the sides of the stand or pedestal on which the body of the bottle rests. No perspective effect required.

[OVER.]

Values.

2. Draw, in freehand perspective, no rulers to be used:

14 (*a*) A rectangular block 4 inches long, 3 inches wide and 1 inch thick, standing upon one end, to the left of the spectator and below the line of sight, and having the rectangular face 3 by 4 inches parallel with the picture plane. Divide the block into cubes showing all the edges of each cube.

14 (*b*) A rectangular box, about 2 inches long, 1 inch wide and ½ inch high, placed to the left of spectator and below the line of sight, with the end parallel with picture plane. The lid is hinged on the upper left receding edge, and is opened at an angle of about 30 degrees with the upper horizontal edge of the end.

4 (*c*) A book 2 inches long, 1 inch wide and ½ inch thick, placed with back towards observer, in an upright position, to the left of him, and *above* the line of sight.

5 3. Draw geometric views (no perspective effect) of the *back*, *side* and *end* of the book above mentioned. Connect the views by dotted lines. Assume the thickness of the boards of the book-cover to be about $\frac{1}{16}$ of an inch. No rulers to be used.

10 4. Construct a square 2 inches to a side; on its left upright side, as base, construct an equilateral triangle; within the triangle inscribe a circle; bisect the lower horizontal side of the square, and from this point of bisection drop a perpendicular 3 inches long and divide the perpendicular into seven equal parts.

Show the construction throughout.

This may be done either with or without compasses and ruler.

Education Department, Ontario.

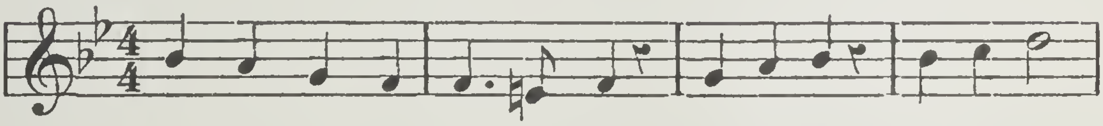
JULY EXAMINATIONS, 1885.

THIRD AND SECOND CLASS TEACHERS.

MUSIC.

Examiner—J. A. McLellan, LL.D.

Values.	
20	1. Write four measures of any song contained in the authorized text-books.
15	2. Write the time-names which you would use in learning the following:—



30	3. Write the preceding in two other keys, one lower, and one higher than the original. Under each note write the name and pitch.
10	4. Explain the use of (*a*) the slur, and (*b*) the tie; in vocal music.

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

THIRD AND SECOND CLASS TEACHERS.

BOOK-KEEPING.

Examiner—Cornelius Donovan, M.A.

Values.

10 1. What is meant by: Assets? Bonded Goods? Debenture? Good Will? Lien? Mortgage? Power of Attorney? Staple Goods? Usury? Voucher?

12
7+5 2. (*a*) Briefly state the essential requisites of a Promissory Note.

(*b*) Brown gives Black his note at 4 mos. from to-day for $150, negotiable and payable at bank. Write the note, dating it from Toronto.

20 3. Journalize:

(*a*) Commenced business with cash $1,000, merchandize $1,000, notes against sundry persons $500.

(*b*) Bought of John Jones for cash, tallow worth $160, and immediately sold it for $140.

(*c*) The Dominion Bank has discounted my note against Harris for $1,000; discount $17.50, cash received $982.50.

(*d*) Sold my house and lot to Green for $2,500. Received in payment cash $1,000, merchandize $500; balance to remain on account.

(*e*) Consigned to Henry & Co., Montreal, goods to be sold on my account, invoiced $645. Paid freight on same in cash $36.50, and gave my note for insurance on do. $19.35.

6 4. Classify the foregoing accounts according as they are "Resources and Liabilities," or "Losses and Gains".

18 5. Post all the items in No. 3.

9 6. State the object, and briefly describe the process, of closing the Ledger.

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

SECOND AND THIRD CLASS TEACHERS.

BOTANY.

Examiner—J. C. GLASHAN.

Values.	
12	1. Enumerate the differences between exogens and endogens, and describe the structure of the seed and the mode of growth of the stem, in each of these classes.
12	2. How can underground stems be distinguished from roots? Name three common Canadian plants that produce underground stems.
12	3. Define *tuber*, *bulb* and *corm*, and give examples of each. What is the chief function of these parts of plants?
12	4. Briefly describe the structure of foliage-leaves. What are the functions of foliage-leaves?
12	5. Name and describe the parts of a simple flower. Which are the essential organs of the flower? What are the chief functions of the non-essential organs?
15	6. Define *fruit*, *drupe*, *pome* and *berry*, and give an example of each of these. Describe the structure of a strawberry and of a raspberry.

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

THIRD AND SECOND CLASS TEACHERS.

LATIN GRAMMAR AND COMPOSITION.

Examiner—J. E. Hodgson, M.A.

Values.

3 1. Give the gender and the genitive singular of:—sermo, senectus, sensus, senex, nix, cupido.

3 2. Mention any peculiarities in the declension of:—sol, meus, artus, filius, nemo, sitis.

3 3. Give the other degrees of comparison of:—gravius, frugalior, vitiosius, similis, junior, audax.

4 4. Give the principal parts of:—ardeo, mordeo, jubeo, cingo, mico, divido, cupio, vendo.

4 5. Write the results of the following combinations:—a with fugio, condo, jacio; de with habeo, ago; ad with habeo, ago; ob with facio; inter with lego; bellum with gero.

6 6. Give two adverbial derivatives from each of the following:—hic, is, ille. Hic, iste, and ille are said to be demonstratives of the first, second, and third persons respectively; explain and exemplify what is meant.

6 7. Give two examples, with explanations, of each of the following:—words differing in meaning according to number, words admitting of two constructions, words whose meaning is distinguished by the quantity of the penult.

7 8. Express in oratio obliqua:—

Etenim (inquit) quum complector animo, reperio quatuor causas, cur senectus misera videatur: unam quod avocet a rebus gerendis . . . Earum, si placet, causarum, quanta quamque sit justa unaquaeque videamus.

[OVER.]

Values.

9. Turn into Latin:—

3 (*a*) For a Roman, he was quite learned.

5 (*b*) And, indeed, even youth often meets-with those things that it does not wish (to meet with).

7 (*c*) When he was seventy years old, he used-to-put-up-with poverty and old age in-such-a-way, that they almost seemed to be a source of pleasure to him.

7 (*d*) Whilst these things were being done, Titurius reached the territories of the Unelli with the troops that he had received from Cæsar.

8 (*e*) Cæsar sent a messenger to his lieutenant to enquire (percontor) why the reserves (subsidium) had not yet advanced, as they had been ordered (impero).

5 (*f*) What difference does it make to me, whether his deeds be good or evil?

4 (*g*) Your friends say that you are not the same as you used to be.

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

THIRD AND SECOND CLASS TEACHERS.

LATIN AUTHORS.

Examiner—J. E. HODGSON, M.A.

Candidates for III take A *and* B.
Candidates for II take B *and* C.

Values.

A.

15 Translate:—

Jucundum potius, quam odiosum! Ut enim adolescentibus, bona indole præditis, sapientes senes delectantur, leviorque fit eorum senectus, qui a juventute coluntur et diliguntur: sic adolescentes senum præceptis gaudent, quibus ad virtutum studia ducuntur. Nec minus intelligo, me vobis, quam mihi vos esse jucundos. Sed videtis, ut senectus non modo languida atque iners non sit, verum etiam sit operosa et semper agens aliquid, et moliens; tale scilicet, quale cujusque studium in superiore vita fuit. Quid, qui etiam addiscunt aliquid? ut Solonem versibus gloriantem videmus, qui se quotidie aliquid addiscentem dicit senem fieri; ut ego feci, qui Græcas literas senex didici: quas quidem sic avide arripui, quasi diuturnam sitim explere cupiens, ut ea ipsa mihi nota essent. quibus me nunc exemplis uti videtis. Quod cum fecisse Socratem in fidibus audirem, vellem equidem etiam illud (discebant enim fidibus antiqui): sed in literis certe elaboravi.

10 1. Parse fully:—*potius, indole, fit, minus, tale, versibus, senem, cupiens, exemplis, illud.*

2 2. Give the derivation of:—*adolescentibus, virtutum, atque, aliquid.*

3 3. *Quid, qui etiam addiscunt aliquid. vellem equidem et illud.* Supply the ellipses.

2 4. *quibus uti.* Name four other verbs that govern the ablative.

4 5, Distinguish:—colentur, diliguntur; aliquid, aliquod; quotidie, in dies; literas, epistolas.

2 6. *sed in literis certe elaboravi.* Who is the speaker? To what does he allude?

Values.

B.

6 Translate :—

Fructus autem senectutis est, ut sæpe dixi, ante partorum bonorum memoria et copia. Omnia vero, quæ secundum naturam fiunt, sunt habenda in bonis. Quid est autem tam secundum naturam, quam senibus emori? quod idem contingit adolescentibus, adversante et repugnante natura.

4 1. Parse :—*ante, fiunt, emori, natura.*

1 2. *contingit adolescentibus.* Distinguish from accidit adolescentibus.

1 3. Omnia *autem.* Mention two other post-positive words.

Translate :—

12 Nec vero clarorum virorum post mortem honores permanerent, si nihil eorum ipsorum animi efficerent, quo diutius memoriam sui teneremus. Mihi quidem nunquam persuaderi potuit, animos, dum in coporibus essent mortalibus, vivere; cum exissent ex iis, emori: nec vero, tum animum esse insipientem, cum ex insipienti corpore evasisset; sed cum omni admixtione corporis liberatus, purus et integer esse cœpisset, tum esse sapientem. Atque etiam, cum hominis natura morte dissolvitur, ceterarum rerum perspicuum est quo quæque discedant; abeunt enim illuc omnia, unde orta sunt: animus autem solus nec, cum adest, nec, cum discedit, apparet. Jam vero videtis, nihil esse morti tam simile, quam somnum.

2 4. *si efficerent.* Why is the subjunctive used here?

1 5. *quo . . teneremus.* When is "quo" used to denote purpose?

2 6. *Mihi . . persuaderi potuit.* State the rule for the construction.

1 7. *admixtione.* Why in the ablative?

1 8. *cœpisset.* When is the deponent form used?

1 9. *morti simile.* Distinguish from *mortis simile.*

10 10. Give an epitome of the arguments for *Old Age.*

Values.

C.

15 Translate—

Juppiter angusta vix totus stabat in aede,
Inque Jovis dextra fictile fulmen erat.
Frondibus ornabant, quae nunc Capitolia gemmis.
Pascebatque suas ipse senator oves;
Nec pudor in stipula placidam cepisse quietem,
Et foenum capiti supposuisse fuit.
Jura dabat populis posito modo praetor aratro,
Et levis argenti lamina crimen erat,
At postquam fortuna loci caput extulit hujus,
Et tetigit summos vertice Roma deos;
Creverunt et opes et opum furiosa cupido,
Et cum possideant plurima plura petunt.
Quaerere ut absumant, absumpta requirere certant;
Atque ipsae vitiis sunt alimenta vices.
Sic, quibus intumuit suffusa venter ab unda,
Quo plus sunt potae, plus sitiuntur aquae,
In pretio pretium nunc est; dat census honores,
Census amicitias; pauper ubique jacet.
Tu tamen auspicium si sit stipis utile quaeris,
Curque juvent nostras aera vetusta manus.

5 1. Parse:—Capitolia, capiti, modo, opum, quibus.

1 2. *Jura dabat.* Distinguish from *jus dabat.*

1 3. *alimenta.* What other case might have been used?

1 4. *plus sitiuntur aquae.* Supply the ellipsis.

3 5. Give the derivation of:—Juppiter, vertice, fictile.

4 6. Scan the seventh couplet of the extract, giving the name of each line and marking the quantity of each syllable.

6 7. Express in Latin:—May 6th, Sept. 24th, Dec. 3rd.

2 8. Give Ovid's name in full. Where and when was he born?

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

THIRD AND SECOND CLASS TEACHERS.

FRENCH GRAMMAR AND COMPOSITION.

Examiner—J. E. Hodgson, M.A.

Values.

3 1. Give the feminine singular of:—pécheur, chanteurs, empereur, bénignes, majeur, grec.

3 2. Compare the adverbs corresponding to:—bon, mauvais, petit.

2 3. Illustrate the two ways of forming the superlative relative of adjectives.

10 4. Write the third person singular of the present indicative and of the imperfect subjunctive of:—prendre, plaire, dire, venir, devoir, suffire, faire, ouvrir, accomplir, atteindre.

5 5. Make a list of five French nouns that differ in meaning according to gender, and state the distinctions.

6 6. State rules for the pluralization of compound nouns formed of:—(*a*) two nouns joined by a preposition, (*b*) an adjective and a noun, (*c*) two nouns placed together.

Pluralize:—une grand'mère, un coq-à-l'an, un essuie-mains.

7. Translate into French:—

4 (*a*) Have you any wine in your glass? No, I have none in it.

4 (*b*) Who is at the door? Aunt Jane, my uncle John's wife.

5 (*c*) Is your sister in town? No, she is in the country with a cousin of mine.

[OVER.]

Values.

5 (*d*) It was with James the first, that began that series of misfortunes which gave to the house of Stuart the title of unfortunate.

3 (*c*) Open the door and walk in.

5 8. Re-write the following sentences, substituting for each pronoun and verb, the corresponding plural form :—

(*a*) Je m'y suis bien amusé.
(*b*) Il n'est pas encore venu me voir.
(*c*) Pense-tu que j'y aille ?
(*d*) Je ne connais pas ce jeune homme.
(*e*) Pourquoi ne t' es tu pas promené ?

20 9. Translate into French :—

I thank you, my dear mamma, for all your kindnesses; but I no longer care for toys (joujou); I am going to tell you, since you bid me (to do) it, what would please me at this moment. There is here an old peasant-woman, very good and very poor. It is true that her granddaughter is engaged to a rich vine-dresser (vigneron), but as it is the husband that will have the money, it may be that he will not give to the grandmother so much of it as her girl would wish; at least I fear so, and I would like the old lady not to want anything.

Education Department, Ontario

JULY EXAMINATIONS, 1885.

THIRD AND SECOND CLASS TEACHERS.

FRENCH AUTHOR.

Examiner—J. E. HODGSON, M.A.

Candidates for III take A *and* B.
Candidates for II take B *and* C.

Values.

A.

25 1. Translate—

Hoche donna une organisation nouvelle à son armée, sans tenir compte ni de la hiérarchie, ni des droits de l'ancienneté; l'ardeur guerrière et patriotique, le talent, le courage tiennent lieu des années ou des grades; il forme de nouvelles divisions, tire des rangs des officiers subalternes et leur subordonne leurs supérieurs; des sergents deviennent capitaines, des lieutenants sont faits colonels. Une commotion électrique passe ainsi dans tous les rangs, et une fièvre d'ambition que rien ne modère s'empare des chefs et des soldats; l'exaltation est à son comble. Hoche, qui l'a excitée, la partage: son langage s'en ressent, et elle communique à ses paroles fortement accentuées une certaine enflure imitée du jargon des clubs, qui est le cachet du style officiel de cette époque. C'est ainsi que le 12 novembre 1793 (21 brumaire), après avoir réorganisé son armée prête à agir dans les Vosges, de concert avec l'armée du Rhin, commandée par Pichegru, Hoche écrit à l'adjoint du ministre de la guerre: "Veuille le génie de la liberté être propice à nos armes! Les mesures sont prises, et, si j'en crois mes pressentiments, la meilleure cause triomphera. Je survivrais avec peine à un revers. Si j'avais ce malheur, j'enverrais à Paris nos dépouilles sanglantes. Patriotes, montrez-les au peuple; qu'il batte son arrière-ban, et que son dernier effort soit le coup de grâce des tyrans."

5 2. Parse:—*écrit, veuille, en (si j'en), j'enverrais, batte.*

2 3. *tiennent.* Write this tense in full.

Values.

1 4. *son armée.* Why not “sa”?

1 5. *l'a excitée.* Account for the concord of the participle.

4 6. *le* 12 *novembre* 1793. Substitute words for the numerals 12 and 1793. Explain *brumaire.*

1 7. *des clubs.* What peculiarity in the use of this expression?

B.

5 1. Translate—

Après avoir entendu cette lecture, Hoche dit froidement, avec une indignation contenue: “Pardon, général, j'ignorais que vous fussiez un gendarme; j'allais me mettre au lit, j'ai besoin de repos, et ma conscience me permet de dormir: demain matin je serai à vos ordres.”

2 2. *fussiez.* What mood and why?

2 3. “*Pardon*, général, j'ignorais que vous fussiez un gendarme.” What is the character of this speech? What was Hoche's object in making it?

3 4. Mention some of the differences between the English and the French use of the indefinite article.

5. Translate each of the following, (*a*) literally, (*b*) idiomatically:—

2 (*a*) Hoche demanda qu'il lui fût permis d'écrire.
2 (*b*) A peine arrivé il se fait conduire à comité.
2 (*c*) Avec laquelle il s'était rencontré à la poison.
4 (*d*) Je ne puis me plaindre de mes malheurs, puisqu'ils m'ont appris à connaître quel ami j'avais en toi, toi mon libérateur.

5 6. Translate—

Elle avait été faite sans la participation de Hoche, qui ne la crut pas durable. Cormatin et les chefs chouans connaissaient trop ses justes méfiances, et, redoutant le perçant regard du jeune général de l'armée de Brest, ils avaient exigé qu'il fût exclu des conférences dans lesquelles cette paix trompeuse avait été préparée.

Values.

2 (*a*) *redoutant.* Write a note on the concord of the pres. part.

7 7. Indicate, as clearly as you can, the pronunciation of:—dix hommes, dix femmes, nous faisons, notre pays, les enfants.

C.

14 1. Translate—

L'Opposition, vaincue en vendémiaire, attendit son succès des élections nouvelles et de la marche légale des événements: elle dominait dans le corps électoral, mieux composé alors qu'il ne l'a été peut-être à aucune époque de notre histoire. Les élections étaient à deux degrés, et les électeurs unissaient à l'autorité du nombre l'autorité non moins nécessaire de la capacité présumée. Leurs choix furent, en l'an IV, comme l'année précédente, l'expression fidèle de l'opinion dominante, celle de l'esprit de réaction contre les terroristes et les montagnards, et du parti constitutionnel et modéré, ami des principes de 1789 et qui voyait avec effroi le pouvoir exécutif toujours entre les mains des conventionnels et des révolutionnaires.

5 2. Write a full note on the position of French adjectives, and illustrate by examples.

2 3. *vendémiaire, en l'an IV.* Explain.

4 4. *les terroristes et les montagnards.* Explain.

5 5. Translate—

Ce dernier effort l'avait épuisé; il congédia ses lieutenants, et vers le soir il s'endormit. Après quelques heures de repos, il s'éveilla en suffoquant. Il ne parlait plus: il eut une crise terrible et, le 19 septembre 1797, il expira doucement entre les bras de sa femme et du général Cebelle, son beau-frère.

3 6. Parse s'endormit, suffoquant, beau-frère.

3 7. *le* 19 *septembre* 1797. Substitute words for the numerals 19 and 1797.

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

THIRD AND SECOND CLASS TEACHERS.

GERMAN GRAMMAR.

Examiner—J. A. McLellan. LL.D.

Values.

4 1. Give the genitive singular and the nominative plural of hund, pferd, wagen, wage, fluß, flur, berg, burg, ſchloß, wald.

4 2. Give the comparative and superlative of gut, fromm, kurtz, hoch, nahe, artig.

3 3. State the gender and the plural of haus, hafen, frau, weib, ſtadt, ſohn.

6 4. State the cases governed respectively by the verbs ſich erinnern, gebieten, helfen, unterſtutzen, begenen; and by the prepositions trotz, bei, wegen, unter, zu, vor, nach, kraft.

9 5. Decline welcher, welche, welches, ; and in the singular and plural, tapferer ſoldat, das große ſchöne haus, derſelbe kleine Knabe.

4 6. Conjugate, in the present and imperfect indicative, dürfen, müſſen, wollen.

6 7. Give the past participle and first person singular of the imperfect indicative of laufen, ſpringen, ſprengen, gehen, reißen, empfangen, vorſchreiben, fahren, helfen, ſchießen, reiten, ſollen.

4 8. When do you use wann, wenn, als, ob? Give examples.

10 9. Translate into German—

(1) Which horse are you going to ride? What kind of a horse is this?
(2) Hand me a drink of water for I am thirsty.
(3) The house had been built before the fire broke out.
(4) I could long ago have learned who the strange gentleman is; but I do not wish it.
(5) O that I had never lived to see this!

[OVER.]

Values	
25	10. Translate into German :—A thirsty starling (der ſtaar) wanted to drink. Before it stood a bottle with some water in it; yet he could not reach it with his short beak (der ſchnabel). He would have broken (zerhacken) the glass, but it was too thick. Then he tried to upset (umwerfen) the bottle; but *for that* he was too weak (ſchwach). At last *by dint of* (durch) thinking he *hit upon* (kommen auf) a happy idea. He gathered (zuſammen ſuchen) little stones and threw them into the bottle. *By this means* (dadurch) the water rose so high that he could reach it with his beak and quench (löſchen) his thirst.

Education Department, Ontario

JULY EXAMINATIONS, 1885

SECOND AND THIRD CLASS TEACHERS.

GERMAN AUTHORS.

Examiner—J. A. McLellan, LL.D.

NOTE.—*Candidates for Third Class will take* I *and* II, *which will be valued* 50 *per cent. higher for these candidates.*

Values.

I.

Translate—

12 (*a*) Aber ſowohl die Lage als die Befeſtigung dieſer Stadt ſchienen jedem Angriffe Trotz zu bieten. Von der Brabantiſchen Seite mit unerſteiglichen Werken und waſſerreichen Gräben umſchloſſen, von der Flandriſchen durch den breiten und reißenden Strom der Schelde gedeckt, konnte ſie mit ſtürmender Hand nicht bezwungen werden; und eine Stadt von dieſem Umfange einzuſchließen, ſchien eine dreimal größere Landmacht als der Herzog beiſammen hatte, und noch überdieß eine Flotte zu erfordern, die ihm gänzlich fehlte. Nicht genug daß ihr der Strom, von Gent aus, alle Bedürfniſſe im Ueberfluß zuführte, ſo öffnete ihr der nämliche Strom noch einen leichten Zuſammenhang mit dem angrenzenden Seeland. Denn da ſich die Fluth der Nordſee bis weit hinein in die Schelde erſtreckt, und den Lauf derſelben periodiſch umkehrt, ſo genießt Antwerpen den ganz eigenthümlichen Vortheil, daß ihr der nämliche Fluß zu verſchiednen Zeiten in zwei entgegengeſetzten Richtungen zuſtrömt.

10 (*b*) Unterdeſſen wurde die Hauptmacht gegen Antwerpen ſelbſt gerichtet, welches der Herzog nunmehr mit ſeinen Truppen gänzlich umzingeln ließ. Er ſelbſt nahm ſeine Stellung zu Bevern in Flandern, wenige Meilen von Antwerpen, wo er ein verſchanztes Lager bezog. Das Flandriſche Ufer der Schelde wurde dem Markgrafen von Ryſburg, General der Reiterei, das Brabantiſche dem Grafen Peter Ernſt von Mansfeld übergeben, zu welchem noch ein anderer ſpaniſcher Anführer, Mondragon, stieß. Die beiden letztern paſſirten die Schelde glücklich auf Pontons, ohne daß das Antwerpiſche Admiralſchiff, welches ihnen entgegen geſchickt wurde, es verhindern konnte, kamen hinter Antwerpen herum, und nahmen bei Stabroek im Lande Bergen ihren Poſten.

3 (*c*) Write notes on the proper names in the above extracts.

II.

Translate into German:—

25 The attack on the Cowenstein Dam was the last attempt that was made to relieve Antwerp. From this time the courage of the besieged sank, and the magistracy of the town vainly strove to inspirit with distant hopes the common folk

(OVER.)

who felt the *present distress* (most keenly). Hitherto bread *had been kept down* to a tolerable price, though the quality of it *was becoming* always worse; little by little, however, the *supply of provisions* dwindled away so much that a famine was near at hand. Yet it was hoped that the city would hold out at least till the corn between the town and the farthest batteries, which was (stood) already in full ear, *could be reaped;* but before that could be done (*before* it came to that) the enemy had captured the last *outwork*, and appropriated the whole harvest to their own use.

FOR SECOND CLASS ONLY.

III.

17 Translate—

Und es wallet und ſiedet und brauſet und ziſcht,
Wie wenn Waſſer mit Feuer ſich mengt,
Bis zum Himmel ſpritzet der dampfende Giſcht,
Und Fluth auf Fluth ſich ohn' Ende drängt,
Und will ſich nimmer erſchöpſen und leeren,
Als wollte das Meer noch ein Meer gebären.

Doch endlich, da legt ſich die wilde Gewalt,
Und ſchwarz aus dem weißen Schaum
Rlaſſt hinunter ein gähnender Spalt,
Grundlos, als ging's in den Höllenraum,
Und reißend ſieht man die brandenden Wogen
Hinab in den ſtrudelnden Trichter gezogen.

Jetz ſchnell, eh die Brandung wiederkehrt,
Der Jüngling ſich Gott befiehlt,
Und—ein Schrei des Entſetzens wird rings gehört,
Und ſchon hat ihn der Wirbel hinweggeſpült,
Und geheimnißvoll über dem kühnen Schwimmer
Schließt ſich der Rachen; er zeigt ſich nimmer.

* * * * * * * *

Und er kommt; es umringt ihn die jubelnde Schaar,
Zu des Königs Füßen er ſinkt,
Den Becher reicht er ihn knieend dar,
Und der König der lieblichen Tochter winkt,
Die füllt ihn mit funkelndem Wein bis zum Rande,
Und der Jüngling ſich alſo zum König wandte:

,,Lang lebe der Rönig! Es freue ſich,
Wer da athmet im roſigten Licht!
Da unten aber iſt's fürchterlich,
Und der Menſch verſuche die Götter nicht
Und begehre nimmer und nimmer zu ſchauen,
Was ſie gnädig bedecken mit Nacht und Grauen."

8 Give a brief sketch of the Life and Writings of Schiller.

Education Department, Ontario

JULY EXAMINATIONS, 1885.

THIRD CLASS.

ENGLISH LITERATURE.

Examiner—JOHN SEATH, B.A.

NOTE.—*150 marks constitute a full paper. In valuing the answers, marks will be deducted for bad literary form.*

Values.

6 + 2 × 4 + 4 = 18 1. What is the connection between the Spenserian stanzas and the rest of "The Lady of the Lake?" Give details in each case.

10 2. Quote the description of Loch Katrine at "summer dawn."

3.

'Have, then, thy wish!'—he whistled shrill,
And he was answered from the hill;
Wild as the scream of the curlew,
From crag to crag the signal flew.
Instant, through copse and heath, arose
Bonnets, and spears, and bended bows;
On right, on left, above, below,
Sprung up at once the lurking foe;
From shingles gray their lances start,
The bracken bush sends forth the dart,
The rushes and the willow-wand
Are bristling into axe and brand,
And every tuft of broom gives life
To plaided warrior armed for strife.
That whistle garrisoned the glen
At once with full five hundred men,
As if the yawning hill to heaven
A subterranean host had given.
Watching their leader's beck and will,
All silent there they stood, and still;
Like the loose crags whose threatening mass
Lay tottering o'er the hollow pass,
As if an infant's touch could urge
Their headlong passage down the verge,
With step and weapon forward flung,
Upon the mountain-side they hung.

Values.

The Mountaineer cast glance of pride
Along Benledi's living side,
Then fixed his eye and sable brow
Full on Fitz-James—'How say'st thou now?
These are Clan-Alpine's warriors true;
And, Saxon—I am Roderick Dhu!'

3×8=24 (*a*) Develop the meaning of "are bristling", "gives life", "as if the yawning hill to heaven a subterranean host had given", "their leader's beck and will", "hollow pass", "urge their headlong passage down the verge", "Benledi's living side", "fixed his eye and sable brow".

20 (*b*) Indicate the chief means by which the poet has given beauty and force to his language.

4 (*c*) What is meant by describing this scene as highly dramatic?

10 (*d*) Write concise elocutionary notes, bringing out as fully as possible the spirit of the passage.

16 4. Contrast life in the village before Rip's long sleep with life there on his return.

5. Whoever has made a voyage up the Hudson, must remember the Kaatskill Mountains. They are a dismembered branch of the great Appalachian family, and are seen away to the west of the river, swelling up to a noble height, and lording it over the surrounding country. Every change of season, every change of weather, indeed every hour of the day produces some change in the magical hues and shapes of these mountains; and they are regarded by all the good wives, far and near, as perfect barometers. When the weather is fair and settled, they are clothed in blue and purple, and print their bold outlines on the clear evening sky; but sometimes, when the rest of the landscape is cloudless, they will gather a band of gray vapors about their summits, which, in the last rays of the setting sun, will glow and light up like a crown of glory.

20 (*a*) What personal attributes does Irving assign to the Kaatskills in this description? Develop the meaning of each of the expressions used to denote these attributes.

Values.

2+2 (*b*) *Every change—barometers.* Account for the repetitions here. What justification does Irving give for describing the mountains as "barometers"?

6 (*c*) We have "are clothed" and "print", but "will gather" and "will glow and light up". Explain this use of "will".

2×3= 6 (*d*) Distinguish the meanings of "made a voyage" and "sailed", "bold" and "distinct", and "glow" and "light up".

3+3 (*e*) Show from the derivation, the exact meaning of "dismembered" and "perfect".

6 (*f*) What characteristics of Irving's style are here exemplified?

6. Write concise critical and explanatory notes on the following passages:*

7 (*a*) The Knight of Snowdoun, James Fitz-James;
Lord of a barren heritage,
Which his brave sires, from age to age,
By their good swords had held with toil;
His sire had fallen in such turmoil,
And he, God wot, was forced to stand
Oft for his right with blade in hand.

18 (*b*) And thus an airy point he won,
Where, gleaming with the setting sun,
One burnished sheet of living gold,
Loch Katrine lay beneath him rolled,
In all her length far winding lay,
With promontory, creek and bay,
And islands that, empurpled bright,
Floated amid the livelier light,
And mountains, that like giants stand
To sentinel enchanted land.

7 (*c*) The rocks presented a high, impenetrable wall, over which the torrent came tumbling in a sheet of feathery foam, and fell into a broad, deep basin, black from the shadows of the surrounding forest. Here, then, poor Rip

---

*In answering this question, the candidate will be expected to explain and comment on the chief difficulties only, and to point out any blemishes and develop any beauties of thought or expression.

Values.

was brought to a stand. He again called and whistled after his dog; he was only answered by the cawing of a flock of idle crows, sporting high in air about a dry tree that overhung a sunny precipice; and who, secure in their elevation, seemed to look down and scoff at the poor man's perplexities.

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

THIRD CLASS.

ENGLISH GRAMMAR.

Examiner—JOHN SEATH, B.A.

Values.

14 1. Describe, in your own words, the function of the adjective, explaining clearly the meaning of the terms "describing", "qualifying" and "limiting", and applying your description to the adjectives in the following:—

the man, five boys, good men, His kind father is dead.

12 2. Explain in your own words the terms "Government" and "Agreement" and illustrate by reference to *all* the governing and agreeing words in the following:—

If need be, thou shalt see thy master's efforts to win these laurels.

3. Rewrite the following statements, making such corrections as you consider necessary, and assigning your reasons therefor:—

8 (*a*) When a superlative is used, the class between which the comparison is made and which is introduced by *of* should always include the thing compared: as, "Bismarck is the greatest of German statesmen," or "Bismarck is the greatest German statesman".

5 (*b*) The sign *to* should not be used for a full infinitive unless the verb in the same form can be supplied from the preceding part of the sentence: as, "you never wrote me: you ought to" is wrong, since it is incorrect to say "you ought to wrote."

7 (*c*) The perfect infinitive is used when the act spoken of is regarded as completed before the time expressed by the governing verb: as, "I hoped to have gone before the meeting."

Values.

4. Distinguish the meanings of:

3 (*a*) *If he go, I shall go* and *If he goes, I go.*

6 (*b*) *I think so, I do think so, I am thinking so* and *I should think so.*

4 (*c*) *He shall go, He will go*, and *He is about to go.*

3 (*d*) *I knew that he speaks the truth* and *I knew that he spoke the truth.*

2 (*e*) *Who did it?* and *Which did it?*

5. Classify and give the syntax of the italicized words in the following:

6 (*a*) He is a fool *to sit alone.*

4 (*b*) *Much* to my surprise, he forgave *them* their fault.

6 (*c*) He is too old *to play* the *fool.*

6 (*d*) My dream last *night* came *true.*

6 (*e*) The *daughter* of *a* hundred earls,
You are not one *to be desired.*

10 6. Classify the propositions in the following, giving their relation :—

Because half a dozen grasshoppers under a fern make the field ring with their importunate chink, while thoussands of great cattle reposing beneath the shadow of the British oak, chew the cud and are silent, pray do not imagine that those who make the noise are the only inhabitants of the field—that, of course, they are many in number—or that, after all, they are other than the little, shrivelled, meagre, hopping—though loud and troublesome—insects of the hour.

4 7. (*a*) Translate into a phrase each of the following :—
sheep-dog, wood-work, railway, steamboat.

4 (*b*) Translate into a compound each of the following: *as dark as coal, that can keep in water, surrounded by the sea, tearing asunder the heart.*

8. Correct any errors in the following, giving your reason in each case:

3 (*a*) These pronouns are indeclinable and used in the singular only.

Values.	
3	(*b*) He looks like his mother does, but he talks like his father.
4	(*c*) He was afraid he would be burned.
3	(*d*) The references will be found useful to the junior student and enable him to obtain an insight into the subject.
3	(*e*) A second division of lands followed and the poet was not only deprived of his estate; but barely escaped with his life when fleeing from the onset of his enemies.
6	(*f*) Trusting that you will remember us, and write as often as you can spare time, and with best love (in which we all heartily join) remember me as ever, &c.
4	(*g*) There are many boys whose fathers and mothers died when they were infants.
4	(*h*) Shall you be able to sell them boots?
4	(*i*) Of all my rash adventures past, This frantic feat must prove the last.
6	(*j*) Nor frequent does the bright oar break The darkening mirror of the lake, Until the rocky isle they reach, And moor their shallop on the beach.

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

THIRD CLASS.

GEOGRAPHY.

Examiner - JAS. F. WHITE.

Values.

16 1. Fully explain these terms—tropic, meridian, solstice, monsoons, mean time, insular climate, longitude, inclination of the earth's axis.

18 2. Draw a map of South America, marking thereon the *six* principal cities, the *three* chief mountain chains, and the course of the *four* most important rivers.

16 3. Name the railroads entering Toronto and Ottawa respectively ; tell about each the direction in which it runs, the important places in Ontario that it passes through, and its termini.

16 4. Describe a voyage from Montreal to New Orleans calling at six important places on the way.

14 5. Where are the following places and for what is each noted :—Odessa, Bermuda, Bordeaux, Archangel, Mauritius, Oporto, Honduras ?

20 6. Describe *one* of these countries, France, China, Brazil, Arabia, under the following heads :—

(*a*) Boundaries and physical features,
(*b*) Animals and plants,
(*c*) Manufactures and commercial centres,
(*d*) Civilization and government.

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

THIRD CLASS.

HISTORY.

Examiner—JAS. F. WHITE.

Values.	
7	1. Write a clear and concise account of the inhabitants of England before and when the Romans arrived.
6	What traces of the presence and influence of the Romans are still to be recognized there?
5	2. Mention the leading features of the Feudal System.
8	Explain the causes of its decay in England.
6	3. Narrate the circumstances that led to the assembling of the first English House of Commons.
10	Show how the country had previously been governed.
7	4. When and by what means did parts of France come under English rule?
7	State how they were severally lost.
8	5. What was the condition of Education and of Literature in England under the Tudors?
8	Name the great English authors of that period and give some account of their writings.
13	6. Explain clearly what is meant by Responsible Government. Give the history of its establishment in Canada.
15 (3 each)	7. Write brief notes on the Quebec Act, Abolition of Seigniorial Tenures, Secularization of Clergy Reserves, Expulsion of the Acadians, Treaty of Washington.

Education Department, Ontario

JULY EXAMINATIONS, 1885.

THIRD CLASS.

ARITHMETIC.

Examiner—J. J. TILLEY.

Values.

9 — 1. Define:—Prime number, factor, common multiple, discount, exchange.

5+4 — Draw a diagram showing that there must be $30\frac{1}{4}$ sq. yds. in a sq. rod, if the linear rod contains $5\frac{1}{2}$ yards.

15 — 2. A merchant bought 124 yds. of cloth at $3.62½ per yd. and 87½ yds. at $4.12½ per yd. At what price per yd. must he sell the whole to realize a profit of 20 %?

15 — 3. Simplify the following and give the result in £, s. and d.:—

$$\tfrac{3}{5}(3\cdot\dot{3}+1\cdot25)\text{of }£1+\tfrac{1}{4}\text{ of }\frac{1\cdot125-\frac{1}{3}\text{ of }1\frac{5}{6}}{\frac{1}{10}\text{ of }3\frac{1}{3}+\frac{13}{72}}\text{ of 9s.}+\frac{2.1\dot{6}}{2.\dot{0}\dot{9}}\text{d.}$$

15 — 4. A farmer sold two loads of wheat, in all 110 bushels for $94.95. One load was sold at 97 cts. per bushel, and the other at 72 cts. per bushel. How many bushels were there in each load?

15 — 5. A merchant bought cloth at $2 per yd. and sold the whole at a profit of $120; had he sold it at 20 % less he would have lost $96. How many yds. did he buy?

15 — 6. What will be the cost of insuring a property worth $47,580 at the rate of ⅞ of 1 %, so that in case of loss the owner may recover both the value of the property and the premium paid?

15 — 7. Divide $4,941 among A, B and C, so that nine months' interest on A's share at 3½ per cent. per annum, nine months' interest on B's share at 3¾ per cent. and nine months' interest on C's share at 4½ per cent. may all be equal.

[OVER.]

Values.	
15	8. I Owe a man $850 and give him my note at 90 days; what must be the face of the note to pay the exact sum, if discounted at $1\frac{1}{4}$ % a month (bank discount,) ?
15	9 A & B engage in trade, A invests $6,000 and at the end of 5 months withdraws a certain sum. B invests $4,000 and at the end of 7 months $6,000 more. At the end of the year A's gain is $5,800 and B's is $7,800. Find the amount A withdrew.
21 9+12	10. (1) If a brick 8 inches long 4 inches wide and 2 inches thick weighs 5 lbs., what will be the weight of a brick of the same material 16 inches long, 8 inches wide and 4 inches thick?
	(2) The top of a ladder reaches to the top of a wall when its foot is at a distance of 10 ft. from the bottom of the wall, but if the foot of the ladder be drawn 4 feet farther from the wall the top of the ladder will reach a point 2 ft. below the top of the wall. Find the length of the ladder.

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

THIRD AND SECOND CLASS TEACHERS.

MENTAL ARITHMETIC.

Examiner—J. J. TILLEY.

Six questions will be considered a full paper. Value 12½ *each.*

1. When gold is at a premium of 33⅓ % find the value of $20 currency.

2. Find the interest on $600 for 5 yrs. 8½ mos. at 8 per cent. per annum.

3. Find the price of the carpet 32 inches wide at $1.33⅓ per yd., which will cover a room 24 feet long and 21 feet wide.

4. A mixture of tea at 40 cts. and 60 cts. a lb., sold at 80 cts. a lb. and gave a profit of 66⅔ per cent. In what proportion was the tea mixed?

5. A., B. and C. agree to build 50 rods of fence for $120. After building 20 rods together A. quit, after building 40 rods B. quit, and C. completed the job; how should the money be divided?

6. I sell goods at twice their cost; if they had cost $30 more the same selling price would have given a profit of only 60 % Find the cost.

7. A person performed a journey at a certain rate of speed: if he had travelled a mile an hour faster he would have accomplished the journey in ¾ of the time; but, if he had travelled a mile an hour less, he would have been 4 hours longer on the road. Find the length of the journey.

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

THIRD CLASS.

ALGEBRA.

Examiner—J. C. GLASHAN.

Values.

8 1. Simplify

$$a^2+b^2+c^2-(a-b+c)(a+b-c)-(b-c+a)(b+c-a)-(c-a+b)(c+a-b).$$

8 2. Divide $a^4+b^4+c^4-2b^2c^2-2a^2c^2-2a^2b^2$ by $a^2+b^2-c^2+2ab$.

8 3. Multiply

$$x^{n-3}-x^{n-6}+x^3-1 \text{ by } x^3+1.$$

8 4. Find the factors of

$$a^2-b^2+c^2-d^2+2ac-2bd.$$

8 5. Find the factors of

$$(a+b)^2-(b-c)^2+(c+a)^2$$

12 6. Simplify

$$\frac{\dfrac{1}{x}-\dfrac{2}{x+c}+\dfrac{1}{x+2c}}{\dfrac{1}{x}-\dfrac{3}{x+c}+\dfrac{3}{x+2c}-\dfrac{1}{x+3c}}$$

10 7. Find the value of x that will satisfy the equation

$$m(x-m)+n(x-n)=2mn.$$

12 8. Determine x given

$$4\left\{(x-a)(x-b)-(x-c)(x-d)\right\}=(d-c)^2-(b-a)^2$$

12 9. Solve the simultaneous equations

$$\frac{1}{x}+\frac{2}{y}=8,$$

$$x+2y=xy.$$

14 10. A drover bought 12 oxen and 20 sheep for \$1340; he afterwards bought 10 oxen and 26 sheep for an equal sum, paying \$8 each more for the oxen and \$3 each more for the sheep. What was the price per ox and what the price per sheep of the first lot?

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

THIRD CLASS.

EUCLID.

Examiner—J. DEARNESS.

NOTE.—*Symbols, except of operation, may be employed. Use capital letters on the diagrams. It is recommended that every step in the demonstration should begin on a new line.*

Values.

3 1. What is a postulate?

3 The postulates permit or ask for the use of the ruler and compass; with what limitations?

3 To what class of "Propositions" do the *axioms* and the *postulates* respectively correspond?

8 2. "A theorem consists of the hypothesis and predicate and requires demonstration." Explain this statement by reference to two propositions, one of them being "The greater side of every triangle is opposite to the greater angle." (I. 18.)

10 3. Draw a straight line at right angles to a given straight line from a given point in the same. (I. 11.)

10 4. In the preceding, given the point at the end of the line, draw a line at right angles without producing the given line. (Apply I. 32.)

12 5. If from the ends of a side of a triangle there be drawn two straight lines to a point within the triangle, these shall be less than the other two sides of the triangle but shall contain a greater angle. (I. 21.)

10 6. In the preceding let ABC be the given triangle, D the given point within it, and AD, CD the lines drawn to D, show that the angle ADC is equal to the sum of the angles ABC, BAD and BCD.

[OVER.]

Values.

10 7. The complements of the parallelograms which are about the diagonals of any parallelogram are equal to one another. (I. 43.)

12 8. If the square described upon one of the sides of a triangle be equal to the sum of the squares described upon the other two sides of it, the angle contained by these two sides is a right angle. (I. 48.)

12 9. Prove the correctness of these rules:

The area of a trapezoid is equal to half the product of its altitude by the sum of its parallel sides.

The area of a rhombus is equal to half the product of its diagonals.

10 10. If a perpendicular (AD) be drawn from the vertex (A) to the base (BC) of a triangle (or the base produced), then shall the sum of the squares on AB and DC be equal to the sum of the squares on AC and BD.

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

THIRD CLASS.

PHYSICS.

Examiner—J. C. Glashan.

Values.

14 1. Define *matter*, *body*, *solid*, *liquid*, *gas*.

What is meant by saying that ice, water and steam are three states of one and the same substance? What is the chief determining condition of each state?

20 2. Define *mass*, *volume* and *density*, and state the relation that holds among them.

How is the mass of a body generally measured?

A body loses in weight as it is carried from a high to a low latitude; what effect has this on its mass? If the body were to increase in volume while it lost in weight through removal towards the equator what would be the effect on its mass and what on its density?

12 3. Define *force* and *energy*, clearly distinguishing between them.

"If it requires a strong force to set a body in motion, it requires also a strong force to stop it."—(*Stewart*, p. 4.) Show that this is not true.

If a body having a velocity of 60 ft. per second be acted upon by no force whatever, what will be its velocity at the end of 5 seconds?

10 4. What is the cause of sound? By what experiments could you prove this?

9 5. "Rapidly mix some melting ice or some snow and some salt together, the mixture is colder than melting ice." What is the reason of this?

10 6. How can you magnify a near object? (Illustrate your explanation by a drawing.)

How can you magnify a distant object?

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

FIRST CLASS PROFESSIONAL EXAMINATION.

HISTORY OF EDUCATION.

Examiner—J. E. Hodgson, M.A.

1. Write a sketch of the "Schools of the Jesuits", touching specially on (*a*) the subject matter of their teaching; (*b*) the means employed to foster attention, emulation, love of learning.

Point out, with reasons, some of the faults and some of the excellences of their system.

2. Give Rousseau's views of the proper mode of Education for a child up to twelve years of age.

" Émile has but little knowledge; but what he has is truly his own "

" Obliged to learn of himself, the pupil makes use of his own reason, and not of that of others."

How does Rousseau explain these statements?

3. Set forth briefly Pestalozzi's (*a*) aim, (*b*) method.

4. " Nature has made the healthful exercise of our faculties, both of mind and body, pleasurable."

What theory does Herbert Spencer base on this principle?

Apply his theory to the teaching of History.

5. "He (the teacher) is apt to settle down unconsciously into a kind of moral and intellectual stagnation—Philistinism, as Mr. Matthew Arnold would call it."

What induces this 'settling down', and what means are suggested to prevent it?

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

FIRST CLASS PROFESSIONAL EXAMINATION.

(2) PSYCHOLOGICAL FOUNDATIONS OF EDUCATION

Examiner—J. C. Glashan.

Note—*Candidates may select any five, but not more than five questions.*

1. "The leading inquiry in the art of Education is how to strengthen memory."—*Bain; p.* 8.

"It cannot too clearly be borne in mind that to acquire any amount of knowledge respecting the particular and the concrete is not to be educated."—*Sully; p.* 299.

Explain these statements.

2. "To train 'Memory' is a very vague way of speaking."—*Bain; p.* 139.

What is meant by the phrase 'The training of memory'?

What are the characteristics of a good memory?

How should the systematic training of memory be carried on?

3. "The patent facts appear to justify us in asserting that the plastic or retentive function is the *very highest energy* of the brain." *Bain; p.* 23.

State some of these 'patent facts.' What do they really justify us in asserting? What general laws of education may be drawn from them?

4. Distinguish between percepts and concepts.

What are the conditions on which the forming of clear (i) percepts, (ii) concepts, depends?

5. Distinguish between growth and development of mind. Give a summary of the processes of intellectual, emotional, and active development.

6. Describe the interaction of emotion, intellection, and action.

What is meant by the phrase 'The training of the will,' and what by the phrase 'The discipline of the will'? How should this discipline be carried on?

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

FIRST CLASS PROFESSIONAL EXAMINATION.

DRAWING.

Examiner—J. A. McLellan, LL.D.

1. *Freehand Drawing* from the object, or from memory. No intruments to be used but the pencil.

Draw the following :—

(*a*) A rough sketch of a pocket-knife—blade open at right angles ; dimensions at pleasure.

(*b*) A design for a vase; height 3″; greatest width, $1\frac{1}{2}$″, with two ornamental bands or borders, one on the neck, the other on the body.

2. *Constructive Drawing*— Rulers to be used :

Draw the necessary plans and elevations to show the construction of the following :—

(*a*) An oblong box, having its corners trimmed with iron clamps; dimensions of box at pleasure.

(*b*) A vertical section (cut longitudinally) of an iron cylinder 2″ long, 1″ in diameter, outside measurement ; walls $\frac{1}{4}$″ thick.

3. *Practical Geometry*—Rulers and compasses to be used. Construction lines shown.

(*a*) Construct an oblong of sides 2″ by 1″, its longer sides being horizontal. Divide the upper horizontal side into *five* equal parts. Produce the vertical sides downwards about $1\frac{1}{2}$ inches, bisect one of the right angles thus formed and trisect the other.

4. *Freehand Perspective*—No instruments to be used but the pencil.

Draw perspective views of the following :—

(*a*) A cube of 2″ side, showing two vertical faces and the upper horizontal face. Divide each of the visible faces into *sixteen* equal squares.

(OVER.)

(*b*) A cylinder 2″ long, $1\frac{1}{2}$″ in diameter, in an upright position, having its ends equidistant above and below the level of the eye.

5. *Scientific Perspective*—Instruments to be used and construction or working lines to be shown.

Height of spectator, 5′; distance, 8′ (feet); scale, $\frac{1}{2}$″=1′ (foot).

(*a*) Place in perspective a pyramid 4′ high, having a square base of 3′ (feet) side, standing upright on the ground, with the front edge of its base parallel with the picture plane, and its nearest corner 5′ (feet) left of the spectator and 3′ (feet) within.

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

FIRST CLASS PROFESSIONAL EXAMINATION.

MUSIC.

Examiner—JAS. F. WHITE.

1. Write the scales of D, and B flat major, and the relative minor scales.

2. Give an example of syncopation.

3. Write the chromatic scale, ascending and descending.

4. Write four measures of "God Save the Queen" in two parts, key of A flat.

5. Give the meaning of the following terms :—

Staccato.
Legato.
Andante.
Allegro.
Allegretto.
Crescendo.
Diminuendo.

Education Department, Ontario.

JUNE, 1885.

SECOND CLASS PROFESSIONAL EXAMINATIONS.

NORMAL SCHOOLS.

HISTORY OF EDUCATION.

Examiner--JAS. F. WHITE.

1. Give a brief account of the state of education among the Greeks, showing the places given to music and gymnastics respectively.

2. Sketch the leading ideas embodied in Ascham's "Scholemaster."

3. What were the reforms advocated by Pestalozzi? What influences did his opinions have on the educational system of his time?

4. Describe the educational system of the Jansenists of Port Royal, showing how it differed from other systems of that age.

5. State the chief principles of education inculcated by Locke and estimate their effect.

6. Give an account of Rousseau's "Emile," and of the educational reforms therein advocated, with comment of your own as to their value.

Education Department, Ontario.

JUNE, 1885.

SECOND CLASS PROFESSIONAL EXAMINATIONS.

NORMAL SCHOOLS.

SCIENCE OF EDUCATION.

1. "Certain ideas are the product of the Intellect alone". Write briefly on some of these ideas.

2. How do we come to know that "Every body is, and must be, in space"?

3. What is *Sensation*, *Perception*, *Conception*? Illustrate as fully as you can.

4. Discuss briefly "What is Consciousness"?

5. What principles are to be observed in cultivating the Memory?

6. Write briefly on *Induction*.

Education Department, Ontario.

JUNE, 1885.

SECOND CLASS PROFESSIONAL EXAMINATION.

NORMAL SCHOOLS.

PRINCIPLES & PRACTICE OF TEACHING.

Examiner—CORNELIUS DONOVAN, M.A.

N.B.—*Four questions constitute a full paper.*

1. (*a*) "The schoolmaster *nascitur non fit.*" Show to what extent this saying is erroneous.
   (*b*) Enumerate the qualifications of a good teacher.

2. Describe and compare the following methods of education:—
   (*a*) Memorizing,
   (*b*) The Study of Words,
   (*c*) The Study of Things,
   (*d*) Experiment and Work.

3. What is meant by the Kindergarten System? State its advantages, and indicate the limits of its usefulness. On what does its success depend?

4. "To know how to put a good question is to have gone a long way towards becoming a useful and efficient instructor."
   (*a*) What are the tests of a good question?
   (*b*) Name some of the objects of questioning.
   (*c*) Give your opinion as to the value of written examinations.

5. Discuss the merits of the following theorem in its relation to the whole period of school life:—"The good teacher seeks to glve each class of faculty a fair chance of development."

6. What ls the utility of the study of History? Give a brief outline of your method of teaching this subject.

Education Department, Ontario.

JUNE, 1885.

SECOND CLASS PROFESSIONAL EXAMINATIONS.

NORMAL SCHOOLS.

SCHOOL ORGANIZATION AND MANAGEMENT.

NOTE.—*Five questions will be considered a full paper.*

1. Define School Organization. What does it include?

2. On taking charge of a school, what policy would you adopt with reference to Organization, Classification, and General Management?

3. "Proper classification has many important advantages." Name them.

4. What rules should be observed in drawing up a time-table for an ungraded school?

5. In order that good discipline may be established and maintained, what points must the teacher ever keep before him (i.) with reference to himself, (ii.) with reference to his pupils?

6. Discuss the most important principles involved in efficient class management.

Education Department, Ontario.

JUNE, 1885.

SECOND CLASS PROFESSIONAL EXAMINATION.

NORMAL SCHOOLS.

ENGLISH LITERATURE.

Examiner—John Seath, B.A.

1. Define the term "Literature", and state clearly the educational value of the subject.

2. What object or objects should be kept in view in teaching Fourth Book Literature? Define, in each case, the relations to Literature-teaching, of Grammar, Derivation, History, Geography, Composition, and the Figures of Speech.

3. (*a*) *Duncan.* This castle hath a pleasant seat; the air
Nimbly and sweetly recommends itself
Unto our gentle senses.
Banquo. This guest of summer,
The temple-haunting martlet, does approve,
By his lov'd mansionry, that the heaven's breath
Smells wooingly here: no jutty, frieze,
Buttress, nor coigne of vantage, but this bird
Hath made his pendent bed, and procreant cradle;
Where they most breed and haunt, I have observ'd,
The air is delicate.

(*b*) *Macbeth.* But wherefore could not I pronounce "Amen?"
I had most need of blessing, and "Amen"
Stuck in my throat.
Lady Macbeth. These deeds must not be thought
After these ways; so, it will make us mad.
Macbeth. Methought I heard a voice cry, "Sleep no more!
Macbeth does murder sleep."—the innocent sleep,
Sleep that knits up the ravell'd sleave of care,
The death of each day's life, sore labour's bath,
Balm of hurt minds, great nature's second course,
Chief nourisher in life's feast,—
Lady Macbeth. What do you mean!
Macbeth. Still it cried, "Sleep no more!" to all the house:
"Glamis hath murder'd sleep, and therefore Cawdor
Shall sleep no more, Macbeth shall sleep no more!"

Write notes on the foregoing passages, explaining and commenting on the chief difficulties only, developing any beauties of thought or expression, and bringing out, as fully as possible, the spirit of each speaker's remarks.

Education Department, Ontario.

JUNE, 1885.

SECOND CLASS PROFESSIONAL EXAMINATIONS.

NORMAL SCHOOLS.

ENGLISH GRAMMAR AND LANGUAGE LESSONS,

(METHODS,)

Examiner—J. E. Hodgson, M.A.

1. Discuss briefly the *educational* value of English grammar as a science and as an art.

2. In what order would you teach beginners to distinguish the parts of speech?

Give reasons for your answer.

3. "The man struck his bay horse."

Show how you would illustrate by this sentence, the meaning of the terms "noun," "strong" (conj.), "qualification," "government."

4. Write notes of a language lesson on some domestic animal.

Education Department, Ontario.

JUNE, 1885.

SECOND CLASS PROFESSIONAL EXAMINATION.

NORMAL SCHOOLS.

PRACTICAL ENGLISH.

Examiner: Cornelius Donovan.

1. Explain, with examples:—barbarism, cant, diction, euphemism, slang, style, solecism, verbiage.

2. Write sentences to illustrats the correct application of the following words:—

administer,
anticipate,
alternative,
condign,
experience,
liable,
mistaken,
mutual,
transpire.

3. Distinguish:—continuous, continual; propose, purpose; apprehend, comprehend; seem, appear; vocation, avocation.

4. Write notes on the proper and the improper uses of the terms:—lady, gentleman; man, woman.

5. Correct or improve:—

(*a*) Being early killed, I sent a party in search of his mangled body.

(*b*) I am one of those who cannot describe what I cannot see.

(*c*) He seldom took up the Bible, which he frequently did, without shedding tears.

(*d*) Homer was not only the maker of a nation but of a language and a religion.

(*e*) The sad faces and the joyous music formed an incongruous sight.

6. Name, and assign causes for, some of the differences between British and American Orthoëpy.

Education Department, Ontario

JUNE, 1885.

SECOND CLASS PROFESSIONAL EXAMINATIONS.

NORMAL SCHOOLS.

ARITHMETIC—METHODS.

Examiner—J. DEARNESS.

NOTE.—*Four questions constitute a full paper.*

1. (*a*) What is implied in "knowing a number"? Illustrate by stating what the pupil should know about the number 7 before he can be said to have thoroughly learned it.

(*b*) Suppose the number 6 taught, detail the steps to be taken to teach the number 7.

2. (*a*) State concisely the method of teaching you would pursue to secure rapid and accurate addition.

(*b*) You take charge of pupils whom you find prompt and accurate in the "endings" in their addition, but who make errors in the "tens". Give drill tables to correct the defect, and show how you would use them.

3. Add 8 lbs. 3 oz., 13 oz. and 5 lbs.; add 11 twelfths and 7 sixteenths. Show clearly the parallelism in the two operations. (In *b* retain throughout the form in which the fractions are here given.)

4. Divide 2ft. 5in. by 9 inches; divide $\frac{1}{2}$ by $\frac{1}{3}$.

Show step by step the parallelism in the two processes, and thence deduce the rule: To divide by a fraction, or invert it and proceed as in multiplication.

5. Reduce 17d. to the fraction of 23d. State how you would instruct a pupil who gives as his answer $\frac{17}{23}$ and tells you in explanation that he writes the term immediately after "of" for the denominator, and knows no other reason.

6. Write notes of a lesson on one of the following:—
   - (*a*) What multiplier of the rate per cent. will produce the rate per dozen?
   - (*b*) The difference between true and commercial discount.
   - (*c*) Ratio.
   - (*d*) Equation of payments.

Education Department, Ontario.

JUNE, 1885.

SECOND CLASS PROFESSIONAL EXAMINATION.

NORMAL SCHOOLS.

ALGEBRA.

Examiner—J. A. McLELLAN, LL.D.

1. Shew how you would make clear the true meaning of *Coefficient.* Examine this illustration :—As 6 apples and 4 apples are ten apples, so $6a + 4a = 10a$.

2. Illustrate clearly, as to a class, the facts

(1) $-a \times b = -ab$. (2) $-b \times (-a) = ab$.

3. Give notes of lesson on resolving into factors the following type-questions :—

(1) $6x^2 - 13xy + 6y^2$

(2) $x^4 + 4y^4$

(3) $a(b-c)^3 + b(c-a)^3 + c(a-b)^3$

(4) $px^3 - (p+q)x^2 + (p+q)x - q$.

4. Outline a first lesson in equations.

5. Teach a lesson on finding the relation connecting a, b, c, when $ax^2 + bx + c$ is a complete square.

Apply this to find the relation among the constants when $a^2x^2 + bx + cd + d^2$ is a square.

Education Department, Ontario.

JUNE, 1885.

SECOND CLASS PROFESSIONAL EXAMINATIONS.

NORMAL SCHOOLS.

WRITING.

Examiner—J. A. McLellan, LL.D.

1. (*a*) Draw four faint horizontal lines about $\frac{1}{8}$ inch apart across the paper.

   (*b*) On this plan or staff, write the *script capitals*—n, m, t, f, g, s, b, l, k, d, q. Pay due attention to the *shading*, and and also to the proportions of each letter.

2. Write each of the following *small* letters, joined three times; complete each group before lifting the pen from the paper; observe the proper proportions and shading without the aid of a plan or staff:—a, c, e, d, g, k, f.

3. Copy the following, as a specimen of your writing:—

> " O masters, if I were disposed to stir
> Your hearts and minds to mutiny and rage,
> I should do Brutus wrong and Cassius wrong,
> Who, you all know, are honorable men."

4. Briefly state the successive stages (order) you would observe when teaching an ordinary *writing lesson.*

Education Department, Ontario

JUNE, 1885.

SECOND CLASS PROFESSIONAL EXAMINATIONS.

NORMAL SCHOOLS.

READING.

Examiner—JAS. F. WHITE.

1. State concisely the advantages and the disadvantages of (*a*) pattern reading; (*b*) simultaneous reading; (*c*) sentence reading, (for beginners); (*d*) recitations and dialogues.

2. Fully describe your method of teaching the alphabet and words of one syllable.

3. Indicate briefly what exercises in vocal culture you would give your pupils, and the ends you would have in view in so doing.

4. Describe your methods of detecting and correcting errors in Reading.

5. As one of the chief objects in Reading is the *getting of ideas*, show what plan you would follow in the several grades to attain this object.

Education Department, Ontario.

JUNE, 1885.

SECOND CLASS PROFESSIONAL EXAMINATIONS.

NORMAL SCHOOLS.

DRAWING.

Examiner—J. A. McLellan, LL.D.

1. *Constructive Drawing.* Use instruments if necessary.
Draw elevation and plan of the following:—
(*a*) A cubic block of stone of 1 inch side.
(*b*) A hollow prism 2 inches in height, having a square base of 1 inch side, and walls ⅛ inch thick.
(*c*) A vertical section (cut through the centre longitudinally) of a piece of rubber tubing, 2 inches long and ¾ inch in diameter, outside measurement—the rubber is ¼ inch thick.

2. *Scientific Perspective.*
Height of spectator, 6 ft. Distance, 12 ft. Scale, ¼ inch to 1 foot.
N. B.—The problems are to be worked on *one* perspective diagram.
Place in perspective the following:—
(*a*) A transparent prism 4 ft. high, having a square base of 2 ft. side, standing upright on the ground 5 ft. to the left of the spectator, its front face coinciding with the picture plane.
(*b*) A cubic block of marble of 2 ft. side, standing on the ground directly in front of the spectator, its front face coinciding with the picture plane.
(*c*) A cross 4 ft. high, with shaft 1 ft. square, and arms 1 ft. below the top of the shaft; each arm projects horizontally 1 ft.; the cross stands upright on the ground with its front face coinciding with the picture plane—the nearest corner of the shaft below the arms is 4 ft. to the right of the spectator.

3. *Practical Geometry.* No written explanation required. *Show construction line.*
(*a*) Construct an oblong of sides 2 and 4 inches, the longer sides to be horizontal.
(*b*) Divide the upper horizontal side into 7 equal parts.
(*c*) Produce the lower horizontal side to the right about 1½ inches, and trisect the right angle thus formed.

4. *Free-hand Perspective.* No instruments to be used except the pencil.
Draw the following:—
(*a*) A rectangular block of wood, 3x3x1 inches, is to be cut into cubes of 1 inch side. Show all the edges of each cube.
(*b*) A cylinder 2 inches long and 1 inch in diameter, is in an upright position, with its base below level of the eye.
(*c*) An open oblong box, dimensions at pleasure, show two vertical faces and the lid in a vertical position.

Education Department, Ontario.

JUNE, 1885.

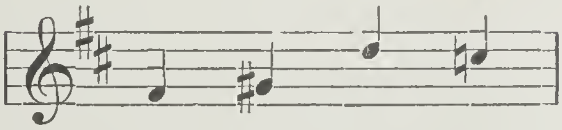
SECOND CLASS PROFESSIONAL EXAMINATION.

NORMAL SCHOOLS.

MUSIC.

Examiner—J. A. McLellan, LL.D.

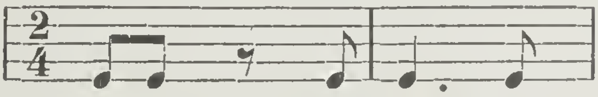
1. Write



in six different keys.

2. Write the time-names for the following measures:—

(a)



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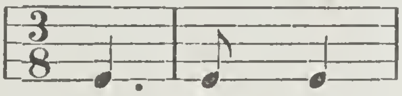

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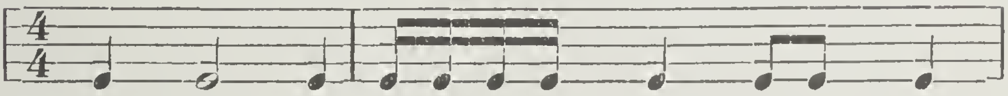

Education Department, Ontario.

JUNE, 1885.

SECOND CLASS PROFESSIONAL EXAMINATIONS.

NORMAL SCHOOLS.

BOTANY.

Examiner—J. C. GLASHAN.

1. Name the essential elements of plant food and the principal constructive materials formed from these.

Distinguish hetween Assimilation and Metastasis. Name some of the important secondary products of metastasis.

2. Briefly describe the enveloping and the essential organs of a flower and the modifications due to cohesion, adhesion and suppression of these.

3. Describe the structure and the germination of the following named seeds:—Cucumber, Bean, Pea, Sugar Maple, Morning Glory, Pine, Peppermint, Iris, Wheat, Oat, Maize. (Illustrate by drawings.)

4. Give the general and the distinguishing characteristics of each of the following named families, and name some common Canadian wild flowers belonging to each:—Ranunculaceæ, Sapindaceæ, Labiatæ, and Trilliaceæ.

Education Department, Ontario.

JUNE, 1885.

SECOND CLASS PROFESSIONAL EXAMINATIONS.

NORMAL SCHOOLS.

CHEMISTRY.

Examiner—JOHN SEATH, B.A.

1. What is the educational value of the study of Chemistry? Describe generally the best method of teaching the subject in a Public School.

2. At what stage in a course of lessons in Chemistry should the following topics be respectively introduced:—The Law of Constant Composition, The Law of Definite Proportions, The Law of Multiple Proportions, The Atomic Theory, Combustion, and Equivalency?

Justify your answer in each case.

3. Give notes on a lesson on "Carbon—its preparation, properties, and economic value".

4. Write a concise paper on the practical value of a knowledge of the sources and properties of Ammonia.

Education Department, Ontario.

JUNE, 1885.

SECOND CLASS PROFESSIONAL EXAMINATION.

NORMAL SCHOOLS.

PHYSICS.

Examiner—J. C. GLASHAN.

NOTE.—*Four questions constitute a full paper.*

1. Enumerate the chief sources of heat.

Show that the heat developed in an incandescent electric lamp, whose current is supplied by a dynamo driven by water-power, was originally derived from the sun.

2. Explain the terms "unit of heat," and "latent heat of fusion," and describe how the latent heat of water may be determined.

Explain the action of the common freezing-machine used in making ice-cream.

3. State the laws of reflection and of refraction of light.

In looking upwards into an aquarium from the side, all the fish appear to be swimming near the top. Why is this?

4. *Briefly* explain the optical structure of the eye, the condition of distinct vision, and the causes and the remedies of long and of short sight.

(*Illustrate by diagrams:*)

5. Describe experiments to prove that if an insulated conductor be electrified, the electrification will be wholly on the surface.

Does increasing the surface without increasing the sectional area of a lightning conductor, increase its "conducting power?" Give reasons.

6. Describe in general terms the action of an electric current upon a magnetic needle, freely suspended near the current.

Describe the construction and the action of any form of the electric telephone.

Education Department, Ontario.

JUNE, 1885.

SECOND CLASS PROFESSIONAL EXAMINATIONS.

NORMAL SCHOOLS.

HYGIENE.

Examiner—J. DEARNESS.

1. (*a*) Give notes of a lecture to your pupils on the benefits of good ventilation.

   (*b*) In a school-house unsupplied with any provision specially designed for ventilation what can the teacher do towards ventilating the room?

2. Write short notes on the following topics:—

   (*a*) Water supply for the school.
   (*b*) Infectious diseases in the school.
   (*c*) Accidents.

3. State the chief functions of the skin and give rules to maintain it in a healthy condition.

4. Name and give the situation of the larger organs or parts of the nervous system and the special function of each.

   Distingnish between conscious and automatic or reflex nerve action. (Use illustrative diagrams where you can.)

5. (*a*) What are the most marked effects of the prolonged use of alcohol on the stomach, heart and brain?

   (*b*) Give notes of a lecture to your boys on the use of Tobacco.

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

FIRST CLASS TEACHERS—GRADES A AND B.

ENGLISH GRAMMAR AND HISTORY OF ENGLISH LITERATURE.

Examiner—JOHN SEATH, B.A.

NOTE.—*Answers to be as concise as possible.*

1. Write notes, with illustrations, on the important points in the history of the English Language, under the following heads:—

I. The characteristics of Old English (or Anglo-Saxon). II. The influence upon Old English of (1) Celtic; (2) the Latin of the Roman missionaries, and (3) Danish. III. The characteristics of English at the Norman Conquest. IV. The influence of Norman French on (1) the Inflections; (2) the Vocabulary; (3) the Word-formation; (4) the Pronunciation; and (5) the Syntax, of Old English. V. The chief characteristics of Early and of Middle English. VI. The rise of Modern English—Chaucer and the East Midland dialect. VII. Character of the changes in English since Chaucer's time in (1) Inflections; (2) Vocabulary; (3) Pronunciation; (4) Word-formation; and (5) Syntax. VIII. The influences at work on the language-forms of Modern English.

2. Illustrate, as fully as you can, the influence upon our vocabulary, of (1) the Principle of Ease; (2) Emphasis, and (3) Analogy.

3. Classify the qualities of style under the following heads:—

I. Intellectual Qualities (that is, those that affect the understanding); II. Emotional Qualities (that is, those that affect the feelings); III. Elegancies. Illustrate each quality by reference to writers with whose works you are acquainted.

4. Give a list of the influences that affected English Literature from the time of Chaucer till the end of the reign of James I. naming those writers that seem to you to be the most marked products of their times, and assigning reasons for you choice.

Education Department, Ontario

JULY EXAMINATIONS, 1885.

FIRST CLASS TEACHERS—GRADES A AND B.

ROMEO AND JULIET.

Examiner—J. E. HODGSON, M.A.

1. Define the dramatic unities and examine Shakespeare's observance of them in his *Romeo* and *Juliet.*

> *Jul.* Wilt thou be gone? it is not yet near day:
> It was the nightingale, and not the lark,
> That pierc'd the fearful hollow of thine ear;
> Nightly she sings on yon pomegranate tree:
> Believe me, love, it was the nightingale.
> *Rom.* It was the lark, the herald of the morn,
> No nightingale: look, love, what envious streaks
> Do lace the severing clouds in yonder east:
> Night's candles are burnt out, and jocund day
> Stands tiptoe on the misty mountain tops.
> I must be gone and live, or stay and die.
> *Jul.* Yon light is not day-light, I know it, I:
> It is some meteor that the sun exhales,
> To be to thee this night a torch-bearer,
> And light thee on thy way to Mantua:
> Therefore stay yet,—thou need'st not to be gone.
> *Rom.* Let me be ta'en, let me be put to death;
> I am content, so thou wilt have it so.
> I'll say yon grey is not the morning's eye,
> 'Tis but the pale reflex of Cynthia's brow;
> Nor that is not the lark, whose notes do beat
> The vaulty heaven so high above our heads:
> I have more care to stay, than will to go:
> Come, death, and welcome! Juliet wills it so.
> How is 't, my soul? let's talk, it is not day.

(*a*) Discuss the literary form of this extract.

(*b*) Point out the figures of speech and explain their force and propriety.

(*c*) Write a note on Shakespeare's use of "thou" and "you."

(*d*) Explain:—"*reflex of Cynthia's brow.*" "*I have more care to stay, than will to go.*" "*The fearful hollow of thine ear.*"

(OVER.)

3. It has been pointed out that the first three acts of this drama are characterized by flaws, as compared with the last two. Illustrate and account for this.

4. "It is a young man's tragedy in which love and youth are brought face to face with hatred and death." Criticize.

5. Quote from the play passages that you deem worthy of remembrance. Give reasons for your preference.

6. Assign each of the following speeches to its proper character and give the context:—

(*a*) "Who set this ancient quarrel new abroach?"

(*b*) "O, then, I see, Queen Mab has been with you."

(*c*) "The clock struck nine when I did send the nurse."

(*d*) "But Mantua's law
Is death to any he that utters them."

(*e*) "The sun for sorrow will not show his head."

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

FIRST CLASS TEACHERS—Grades A and B.

CHAUCER, POPE, AND WORDSWORTH.

Examiner—John Seath, B.A.

I.

1. Name the chief characters of Chaucer's Prologue other than the Persoun, quoting from Chaucer a descriptive phrase suitable to each.

2. A good man was ther of religioun,
And was a poure Persoun of a toun;
But riche he was of holy thought and werk.
He was also a lerned man, a clerk
That Cristes gospel trewly wolde preche;
His parisschens devoutly wolde he teche.
Benigne he was, and wonder diligent,
And in adversité ful pacient;
And such he was i-proved ofte sithes.
Ful loth were him to curse for his tythes,
But rather wolde he *y*even out of dowte,
Unto his poure parisschens aboute,
Of his offrynge, and eek of his substaunce.
He cowde in litel thing han suffisaunce.
Wyd was his parissche, and houses fer asonder,
But he ne lafte not for reyne ne thonder,
In sicknesse nor in mischief to visite
The ferreste in his parissche, moche and lite,
Upon his feet, and in his hond a staf.
This noble ensample to his scheep he *y*af
That first he wroughte, and afterward he taughte. . . . .
He was a schepherde and no mercenarie.
And though he holy were, and vertuous,
He was to sinful man naught despitous,
Ne of his speche daungerous ne digne,
But in his teching discret and benigne.
To drawe folk to heven by fairnesse
By good ensample, this was his busynesse:
But it were eny persone obstinat,
What so he were, of high or lowe estat,
Him wolde he snybbe scharply for the nones,
A bettre preest I trowe, ther nowher non is.

He waytede after no pompe and reverence,
Ne makede him a spiced conscience,
But Cristes lore, and his apostles twelve,
He taughte, but first he folwede it himselve.

(*a*) Write in modern literary English the preceding extract.

(*b*) By means of this extract, illustrate the differences (one illustration for each difference) between Chaucer's English and modern English, explaining, when possible, the origin of Chaucer's peculiar forms.

(*c*) Illustrate from the above what Matthew Arnold calls "the lovely charm of Chaucer's movement."

II.

3, The "Prologue to the Satires" has been described as a poetical apology by Pope for his life. Discuss this statement.

4. Peace to all such! but were there one whose fires
True genius kindles, and fair fame inspires;
Blest with each talent and each art to please,
And born to write, converse, and live with ease;
Should such a man, too fond to rule alone,
Bear, like the Turk, no brother near the throne,
View him with scornful, yet with jealous eyes,
And hate for arts that caused himself to rise;
Damn with faint praise assent with civil leer,
And without sneering, teach the rest to sneer;
Willing to wound, and yet afraid to strike,
Just hint a fault, and hesitate dislike;
Alike reserved to blame, or to commend,
A timorous foe, and a suspicious friend;
Dreading even fools, by flatterers besieged,
And so obliging that he ne'er obliged;
Like Cato, give his little Senate laws,
And sit attentive to his own applause;
While wits and templars every sentence raise,
And wonder with a foolish face of praise—
Who but must laugh, if such a man there be?
Who would not laugh, if Atticus were he?

(*a*) Write explanatory notes on this extract.

(*b*) This description is said to illustrate Pope's characteristic excellences. Justify the statement.

III.

5. Give the substance of the sonnet in which Wordsworth enunciates his theory of the poet's art. Apply his canon to the sonnets.

6. "Some of the noblest of Wordsworth's sonnets are consecrated to liberty; some describe with incomparable felicity the personal feeling of the writer; some might be termed simply descriptive, were it not that even these are raised above the rank of descriptive poetry, by the pure and lofty imagination of the poet. 'The light that never was on sea or land,' pervades the humblest of these pieces, and throughout there is inculcated a cheerful, because divine, philosophy."
—*Dennis.*

Justify this criticism in detail, giving in each case one well marked illustration from Matthew Arnold's collection.

7. It is a beauteous Evening, calm and free;
The holy time is quiet as a Nun
Breathless with adoration; the broad sun
Is sinking down in its tranquility;
The gentleness of heaven is on the sea:
Listen! the mighty Being is awake,
And doth with his eternal motion make
A sound like thunder—everlastingly.
Dear Child, dear Girl! that walkest with me here,
If thou appear'st untouched by solemn thought,
Thy nature is not therefore less divine:
Thou liest in Abraham's bosom all the year;
And worshipp'st at the Temple's inner shrine,
God being with thee when we know it not.

(*a*) Designate this sonnet by an appropriate title.

(*b*) Write explanatory notes, giving a concise account of Wordsworth's philosophical tenets as embodied in this sonnet.

(*c*) By many this sonnet is regarded as one of the finest in our language. Show, as well as possible, wherein its perfection consists.

IV.

8. Contrast the styles of Chaucer, Pope, and Wordsworth, illustrating your answer from their works.

9. In the same manner, contrast the attitudes of these authors towards Man and Nature.

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

FIRST CLASS TEACHERS—GRADES A AND B.

ADDISON AND MACAULAY.

Examiner—J. E. HODGSON, M.A.

1. Write a short account of the life and times of Addison, from a literary stand-point.

2. Quote from the Prologue to the Satires, Pope's estimate of Addison. Characterize its justice.

3. Give the substance of the Vision of Mirzah.

4. Enumerate some of the excellences and defects of Macaulay's work as an essayist.

5. Addison gave the play to the managers of Drury-lane theatre, without stipulating for any advantage to himself. They, therefore, thought themselves bound to spare no cost in scenery and dresses. The decorations, it is true, would not have pleased the skilful eye of Mr. Macready. Juba's waistcoat blazed with gold lace; Marcia's hoop was worthy of a duchess on the birthday; and Cato wore a wig worth fifty guineas. The prologue was written by Pope, and is undoubtedly a dignified and spirited composition. The part of the hero was excellently played by Booth. Steele undertook to pack a house. The boxes were in a blaze with the stars of the peers in opposition. The pit was crowded with attentive and friendly listeners from the inns of court and the literary coffee-houses. Sir Gilbert Heathcote, governor of the Bank of England, was at the head of a powerful body of auxiliaries from the city;—warm men and true whigs, but better known at Jonathan's and Garroway's than in the haunts of wits and critics.

Examine as to how far the above conforms to, or violates, the rules laid down for the construction of the paragraph.

6. Compare the styles of Addison and Macaulay with regard to grace, humor, pathos, clearness, strength.

Education Department, Ontario.

JULY EXAMINATIONS, 1885.

FIRST CLASS TEACHERS—GRADES A AND B.

ENGLISH AND CANADIAN HISTORY.

Examiner—JAS. F. WHITE.

(*Five questions will be counted a full paper*).

1. Give a sketch of England under Elizabeth, dealing with the social condition, the literary activity, the trade and wealth of the country; and the personal supremacy of the sovereign.

2. Trace the growth of Ministerial Responsibility, individual and collective, referring especially to the Royal Council, Temple's Scheme, and Sunderland's Plan.

3. Sketch the character and policy of Edward Hyde, Earl of Clarendon, showing the faults of his administration, and the grounds of his impeachment.

4. What are the leading provisions of the Declaration of Rights and the Bill of Rights? Show the circumstances that led to the passing of the latter, and examine its bearing upon the legal powers of the Crown, and the privileges of Parliament and people.

5. Give a concise account of the system of French Government of Canada, commenting upon the important changes made, and dedescribing the functions of the chief officers and the state of the administration of justice.

6. Write a paper on the trade and industries of the colony under the French *régime*, noting the efforts of the several French Ministers for their development, and the results.

Education Department, Ontario.

TRAINING INSTITUTES.

FINAL EXAMINATIONS, DECEMBER, 1885.

THE HISTORY OF EDUCATION.

Examiner—JOHN SEATH, B.A

1. Give in detail the grounds for the following statements:—

(*a*) "The object of Greek education was to foster to its highest development the inner life of man, to form the philosopher who should guide the man of action".

(*b*) "Roman education aimed at no higher object than to mould the man of action himself, to make a citizen fit, in the language of Milton, to 'perform justly, skilfully, and magnanimously, all the offices, both public and private, of peace and war'. At a later period, this practical education took a more intellectual shape, and became crystallized into oratory".

2. Show clearly why each of the following names is important in the history of educational theories:—

John Sturm, Comenius, Montaigne, Locke, Rousseau, and Herbart.

Briefly criticize the system of each.

3. Discuss the influence of the Jesuits and Jansenists on the evolution of educational theories.

4. Give a concise account of Pestalozzi's principles of education, and show how his system has influenced the general theory and practice of modern teaching.

5. By reference to classics and science, show the practical advantage of a knowledge of the history of educational theories.

Education Department, Ontario.

TRAINING INSTITUTES.

FINAL EXAMINATIONS, DECEMBER, 1885.

THE SCIENCE OF EDUCATION.

Examiner—J. A. McLellan, LL.D.

1. Give an account of the three divisions of the mind. To what extent is the Educator concerned with each of these divisions?

2. Discuss, as fully as you can, Association by Similarity.

State important facts in connection with the training of the Memory.

3. Give the substance of Sully's remarks on sympathy?

What are the educational aspects of sympathy?

4. What are the principal conditions of effective mental action?

5. What cautions – according to Bain—are to be observed in moral lessons?

6. Remark briefly on the varieties of Memory as given by Latham, viz: Portative, Analytical, Assimilative, and Index Memory.

7. Discuss *Examinations* under the following heads:

(1) Kinds of Examination.

(2) Educative value of Examinations.

(3) Evils to be guarded against.

Education Department, Ontario

TRAINING INSTITUTES.

FINAL EXAMINATIONS, DECEMBER, 1885.

SCHOOL LAW AND REGULATIONS.

Examiner—J. E. Hodgson, M.A.

1. What are the requisite qualifications for the position of:—(*a*) Inspector of Public Schools, (*b*) Principal of a County Model School, (*c*) High School Assistant?

2. Give the substance of the Regulations bearing on "Religious Instruction" in Public and High Schools.

3. What is the composition of the Board of Examiners for Entrance to High Schools?

4. Under what circumstances has a Separate School Board power to appoint a High School Trustee?

5. From what different sources do Trustees obtain funds for the maintenance of High and Public Schools?

Education Department, Ontario.

TRAINING INSTITUTES.

FINAL EXAMINATIONS, DECEMBER, 1885.

SCHOOL MANAGEMENT AND HYGIENE.

Examiner—J. E. HODGSON, M.A.

1. What are the distinguishing features of "humanistic" and of "realistic" education respectively?

In what respects are they compatible with each other?

2. "The teacher's work in school naturally falls into three great divisions."—*Landon.*

Enumerate these divisions and state their relation one to another.

3 Give an account of the organization and methods of the Training Institute which you are attending.

4. What is meant by the "*monitorial*" system? Mention some of its advantages and disadvantages respectively.

5. Criticize the following time-table, and make such changes as would improve it:

TIME.	FORM I.	FORM II.
9-10	Arithmetic.	English Grammar.
10-11	Algebra.	English Composition.
11-12	Euclid.	English History.

6. "There can be no doubt that very much of the complaint we hear of the injurious effects of school life upon children, and the early breaking-down and heavy death-rate among teachers, are due far more to unwholesome conditions of work, than to the severity of the work itself."—*Landon.*

On what do *wholesome* conditions of work depend?

Education Department, Ontario.

TRAINING INSTITUTES.

FINAL EXAMINATIONS, DECEMBER, 1885.

METHODS IN ENGLISH.

Examiner—JOHN SEATH, B.A.

NOTE.—*The candidate will assume that the questions have reference to the lowest division of a High School or the fifth form of a Public School. He should state, when necessary, the modifications which would adapt the methods to higher divisions.*

1. State clearly the objects to be kept in view in teaching each of the following subjects:

English Grammar, Literature, History, and Geography.

2. Show by a brief scheme how you would apply the inductive method of teaching English Grammar in the case of

(1) the definition of the verb, and (2) the nature of inflections.

3. Draw up a short examination paper on the Geography of Ontario, especially intended to train the Reasoning faculty.

4. By means of a series of questions on the reign of Henry VIII., illustrate the value of History as a means of culture.

5. Outline a course of study in English composition.

6. Illustrate as fully as time will permit, your conception of the proper mode of teaching Literature by reference to the following poem, stating (1) what information you would give, and (2) what questions you would ask :—

When evening's shadowy fingers fold
The flowers of every hue,
Some shy, half-opened bud will hold
Its drop of morning dew.

Sweeter with every sunlit hour
The trembling sphere has grown,
Till all the fragrance of the flower
Becomes at last its own.

(OVER.)

We that have sung perchance may find
Our little meed of praise,
And round our pallid temples bind
The wreath of fading bays:

Ah, Poet who hast never spent
Thy breath in idle strains,
For thee the dewdrop morning lent
Still in thy heart remains;

Unwasted, in its perfumed cell
It waits the evening gale;
Then to the azure whence it fell
Its lingering sweets exhale.

7. Give a list of faults to be avoided in teaching Reading, Orthography and Orthoëpy, English Grammar, Composition, Literature, History, and Geography.

8. What use would you make of the black-board in teaching History, Geography, and Orthoëpy?

Education Department, Ontario.

TRAINING INSTITUTES.

FINAL EXAMINATIONS, DECEMBER, 1885.

METHODS IN MODERNS.

Examiner—J. E. Hodgson, M.A.

I. "The example of Germany may show us what a nation loses from having no prose style."

* * * * * * * *

"To the practical, modern, and social genius of the French, a true prose was indispensable. They produced one of conspicuous excellence."—*Matthew Arnold.*

(1) What are the distinguishing characteristics of German prose and French prose respectively, to which Mr. Arnold refers?

(1) Explain fully and illustrate the meaning of the terms *synthetic* and *analytic*, as applied to languages.

II. "No lesson in French which is confined to translation and reading is worth much, if it is not followed up by conversation."
—*J. G. Fitch.*

(1) Discuss this statement.

(2) What are the advantages and the disadvantages of the *Mastery System* of teaching French and German?

III. Having taught a class the *principal parts* and the person endings of the simple tenses of *parler*, how would you utilize their knowledge in teaching other verbs of the first conjugation?

IV. Write notes of a French lesson on:—(*a*) demonstratives, (*b*) interrogative sentences, (*c*) the syntax of the def. article.

V. Il secoue son compagnon qui n'a pointe quitté ses vêtements. Je fais observer qu'il est trop faible pour marcher; mais le relieur n'écoute pas; il le force à se lever, l'entraîne en le soutenant, et arrive à la loge du portier qui court chercher un fiacre. J'y vois monter le malade presque évanoui avec le débardeur impatient, et tous deux partent, l'un pour mourir peut-être, l'autre pour dîner à la Courtille !

(1) Show, by translating this passage, the difference between literal translation and idiomatic translation. What is the educational value of such an exercise ?

(2) Frame a set of questions, based on this passage, to bring out the pupils' knowledge of : (*a*) concord, (*b*) government, (*c*) negation, (*d*) reflexive verbs, (*e*) position of adjectives, (*f*) formation of adverbs.

Education Department, Ontario.

TRAINING INSTITUTES.

FINAL EXAMINATIONS, DECEMBER, 1885.

METHODS IN CLASSICS.

Examiner—J. E. Hodgson, M.A.

I. "If you had in those days asked Erasmus or Sir Philip Sidney why Latin and Greek should hold this prominent, this almost exclusive rank, the reply would have been easy."—*J. G. Fitch.*

(1) What would have been the nature of the reply?

(2) State in general terms the difference between the objects and methods of teaching Latin or Greek to (*a*) pupils looking forward to a special course in Classics, (*b*) pupils contemplating a pass course.

II. Having explained to a class the meaning of the term "*stem*", what use would you make of their knowledge in teaching the Accidence?

III. Write notes of a lesson on :—(*a*) abl., abs., (*b*) part. gen., (*c*) inf. mood, (*d*) prep's gov'g abl. or acc.

IV. 79. Apud Xenophontem autem moriens Cyrus major hæc dicit: "Nolite arbitrari, O mihi carissimi filii. me, cum a vobis discessero, nusquam aut nullum fore. Nec enim, dum eram vobiscum, animum meum videbatis: sed eum esse in hoc corpore ex iis rebus, quas gerebam, intelligebatis. Eundem igitur esse creditote, etiam si nullum videbitis. 80. Nec vero clarorum virorum post mortem honores permanerent, si nihil eorum ipsorum animi efficerent, quo diutius memoriam sui teneremus.

(1) Show, by translating this passage, the difference between literal translation and idiomatic translation. What is the educational value of such an exercise?

(2) How would you, from this passage, illustrate to a class the contrast between Latin and English, with regard to (*a*) word-building, (*b*) sentence framing, (*c*) copulation of sentences or clauses?

(3) Frame questions for an advanced class, bearing on:—*Apud Xenophontem, haec, fore, animum meum, gerebam, eundum esse, eorum ipsorum, quo.*

Education Department, Ontario.

TRAINING INSTITUTES.

FINAL EXAMINATIONS, DECEMBER, 1885.

MATHEMATICS AND SCIENCE: METHODS.

Examiner—J. A. McLellan, LL.D.

1. What difficulties lie in the way of a beginner in Euclid? Show what course you would follow:—

(1) In making clear the Definitions and Axioms.
(2) In making the pupil master of Prop. IV., Bk. I.

2. Outline the method you would follow in teaching:—

(1) Least Common Multiple (Arithmetical.)
(2) Simple Proportion.
(3) Square Root.

3. State, with brief remarks, the principal objects of *questioning.* Illustrate the value of questioning by examples drawn from:—

(1) Authors, (2) Algebra, (3) English Grammar.

4. "Proceed from the known to the unknown": Apply this principle:—

(1) In giving clear ideas of *Index* and *Coëfficient.*
(2) In teaching Simple and Quadratic Equations.
(3) In teaching about the *derived* expressions, $a^3+b^3-c^3+3abc$, *&c., &c.*, facts corresponding to those which have been taught about $a^3+b^3+c^3-3abc$.

5. State, with reasons, whether you consider Chemistry more suitable than Physics for educational purposes? What distinction should be made in the teaching ot Chemistry in *High Schools* and in *Colleges?* What is your opining of the value of "Chemical Problems" in teaching Chemistry?

6. "Instead of mixing up experiments of combination and experiments of decomposition, and experiments in which both combination and decomposition take place"—a method more in harmony with the laws of thought may be followed.

(1) Criticise the imperfections of the method sketched above.
(2) Indicate a more rational method.